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The annual value of other Fellowships, Bursaries, and Prizes which may be held by Students in the Faculty of Medicine amounts to about £1,250. Total annual value about £5,000.

For particulars see University Calendar.

Information relative to Matriculation and the Curricula of Study for Degrees, Examinations &c., may be obtained on application to the Clerk of the Senatus, or to the Dean of the Faculty of Medicine; and full details are also given in the University Calendar, published by JAMES THIN, 55 South Bridge, Edinburgh.

By authority of the Senatus, JOHN KIRKPATRICK,
September, 1892. Sec. Sen. Acad.

University of Dublin.

SCHOOL OF PHYSIC.

Regius Prof. of Physic,	Sir John T. Banks, K.C.B., M.D.
Regius Prof. of Surgery,	Sir G. Porter, Bart. M.D.
Univ. Prof. of Anatomy and Chirurgery,	Daniel J. Cunningham, M.D., F.R.S.
Univ. Prof. of Chemistry,	J. Emerson Reynolds, M.D., F.R.S.
Univ. Prof. of Botany,	E. Perceval Wright, M.D.
Prof. of Surgery in Trinity College,	Edward H. Bennett, M.D., M.Ch.
Univ. Anatomist,	Henry St. J. Brooks, M.D.
Prof. of Comparative Anatomy,	Henry W. Mackintosh, M.A.
Erasmus Smith's Prof. of Natural Philosophy,	George F. FitzGerald, M.A., F.R.S.
Univ. Lecturer in Medical Jurisprudence,	Henry T. Bewley, M.D.
Univ. Examiner in Surgery,	Charles B. Ball, M.D., M.Ch.
King's Prof. of Institutes of Medicine,	John M. Purser, M.D.
King's Prof. of Practice of Medicine,	John M. Finny, M.D.
King's Prof. of Materia Medica and Pharmacy,	Walter G. Smith, M.D.
King's Prof. of Midwifery,	Arthur V. Macan, M.B.

WINTER SESSION, 1892-93.

THE WINTER SESSION will commence on the 1st October, by the Opening of the Disecting Room, and will terminate on the 31st March. Lectures will commence on the 1st November.

LECTURES:

Practical Anatomy.

Dr. Cunningham - at 12 o'clock, on Tuesdays, Thursdays, and Saturdays.

Systematic Anatomy.

Dr. Cunningham - at 12 o'clock, on Mondays, Wednesdays, and Fridays.

Applied Anatomy.

Dr. Cunningham and Dr. Brooks - at 2 o'clock, on Mondays, Wednesdays, and Fridays.

Chemistry.

Dr. Reynolds, - at 1 o'clock, on Tuesdays, Thursdays, and at 11 on Saturdays.

Botany.

Dr. Wright, - at 12 o'clock on Tuesdays, Thursdays, and Saturdays, during Hilary Term.

Zoology.

Mr. Mackintosh, - at 12 o'clock on Mondays, Wednesdays, and Fridays, during Michaelmas and Hilary Terms.

Surgery.

Dr. Bennett, - at 1 o'clock, on Mondays, Wednesdays, and Fridays.

Practice of Medicine.

Dr. Finny, - at 1 o'clock, on Tuesdays, Thursdays, and Saturdays.

Midwifery.

Mr. Macan at 3 o'clock, on Mondays, Wednesdays, and Fridays.

Heat, Electricity, and Magnetism.

Dr. FitzGerald, - at 1 o'clock, on the days published at the commencement of each Term.

Physiology.

Dr. Purser, - at 12 o'clock, on Mondays, Wednesdays, and Fridays.

N.B.—Christmas Vacation commences on 25th December, and terminates on 7th January.

Medical Scholarships.

Two Medical Scholars are elected annually, by the Board of Trinity College, at an Examination held at the end of June, subject to conditions stated in the College Calendar. Each Scholarship is worth £20 per annum, and is tenable for two years.

Matriculation.

No Student can be permitted to attend any of the Lectures delivered in the School of Physic, or to attend Dissections, who has not complied with the provisions of the School of Physic Act (Geo. III., ch. 84), as to Matriculation.

The Registrar of the School of Physic will attend at 1 o'clock each day to matriculate Students.

HENRY W. MACKINTOSH, M.A., *Registrar School of Physic.*

Sept. 24th, 1892.

University of Dublin.

SCHOOL OF PHYSIC.

SIR PATRICK DUN'S HOSPITAL.

Consulting Physician,	Sir John T. Banks, K.C.B., M.D.
Consulting Surgeon,	Sir G. Porter, Bart., M.D.

Physicians.

Clinical Physicians,	John M. Purser, M.D. John M. Finny, M.D. Walter G. Smith, M.D.
Midwifery Physician,	Arthur V. Macan, M.B.
Assistant Physician,	Alfred R. Parsons, M.B., B.Ch., B.A.O.

Surgeons.

Clinical Surgeons,	Edward H. Bennett, M.D., M.Ch. Henry St. J. Brooks, M.D. Charles B. Ball, M.D., M.Ch.
Assistant Surgeon,	Edward H. Taylor, M.B., B.Ch., B.A.O.

THE HOSPITAL is visited daily, at Nine o'clock, by each of the Physicians and Surgeons on duty. The Hospital Dispensary is open from Nine o'clock to Eleven o'clock, daily (except Sundays), for the relief of Patients, and for the instruction of Students.

The payment of Twelve Guineas entitles a Student to the benefits of Hospital Attendance and Clinical Teaching for the Winter and Summer Sessions, commencing on the 1st of October.

The Fees will be received by the Hon. Sec., Dr. Ball, by any member of the Staff, or by the Registrar of the School of Physic in Trinity College.

Clinical Medals.

The Governors of the Hospital award a Silver Clinical Medal in Medicine to the Student who shall pass the best Examination on the Medical Cases treated in the Hospital during the year; and a Silver Clinical Medal in Surgery to the Student who shall pass the best Examination on the Surgical Cases treated in the Hospital during the year.

The Examinations will be held Monday, March 20th, 1893, and will consist of three parts—(1) Written; (2) Clinical; (3) Oral.

(1) *Written Examination.*—Candidates for the Medical Medal must refer to, and write a Commentary on, the Medical Cases recorded by them, in the Hospital Records, while acting as Clinical Clerks, Dressers, or Resident Pupils; and Candidates for the Surgical Medal must make a similar reference to, and Commentary on, the cases in the Surgical Wards, recorded in like manner.

(2) *Clinical Examination.*—Candidates will be examined in the methods of Clinical Observation by the Hospital Staff, at least two cases being allotted to each Candidate for this purpose.

(3) *Oral Examination.*—A Public Oral Examination will be conducted by the Members of the Staff upon the Theory and Practice of Medicine and Surgery, respectively.

Trained Nurses.

The Nurses' Training Institution, under the management of the Hospital, trains Medical, Surgical, and Fever Nurses, and supplies them to order for private cases, after they have completed the full course of training, and have passed the Examination, at the close, required by the Hospital Rules.

N.B.—Applications for trained Nurses should be made to the Lady Superintendent at the Hospital.

SIR PATRICK DUN'S MATERNITY.

Practical Midwifery.

Students desirous of entering for Twelve Months' Instruction in Practical Midwifery are required to pay a Maternity Fee of Three Guineas each to the Registrar of the Hospital, before 1st January, 1893.

Students of Trinity College are not liable to any other payment for instruction in Practical Midwifery.

Other Students are required to pay Three Guineas each, to the King's Professor, for Twelve Months' Practical Instruction, in addition to the Hospital Maternity Fee.

Midwife Nurses.

Midwife Nurses are trained in connection with the Maternity of Sir P. Dun's Hospital, under the superintendence of the King's Professor of Midwifery, on payment of a fee of £5.

The Course lasts for Six Months, and furnished apartments, with fuel and gas, are provided by the Board of the Hospital for those who desire it.

Each trained Midwife Nurse will receive a Diploma from the Governors of the Hospital on her completion of Six Months' Practical Instruction.

CATHOLIC UNIVERSITY MEDICAL SCHOOL,

CECILIA-STREET, DUBLIN.

WINTER SESSION, 1892-93, will begin NOVEMBER 2nd, 1892, and will end MARCH 31st, 1893. Dissecting Room open October 1st.

Introductory Course, in which Students are taught the first steps in the Medical Curriculum, begins October 14th. All beginners should attend the Course, which is free to Students of the School.

Re-building of School.—The School has been re-built during the past year and it is now nearly doubled in size.

Exhibitions and Prizes.—Six Exhibitions, value £14 14s., £14 14s., £10, £10, £12 10s., £12 10s., Two Gold and several other Medals, are offered for Competition annually.

Prospectus, Guide for Students, and further information, may be had on application to —

THE REGISTRAR,
MEDICAL SCHOOL, CECILIA-STREET, DUBLIN.

UNIVERSITY OF EDINBURGH.

PRELIMINARY EXAMINATION FOR DEGREES IN MEDICINE, &c.

UNDER the new Ordinance regulating the course of Study and the Examinations for DEGREES in MEDICINE and SURGERY, which has now received the approval of Her Majesty in Council, and will come into operation on 1st October next, all Students before beginning Medical Studies are required to pass a Preliminary Examination in—(1) English, (2) Latin, (3) Elementary Mathematics (comprising Arithmetic, Geometry, and Algebra), and (4) either Greek or French or German. In the case of a Candidate whose native language is not English, an Examination in the native language of the Candidate may be substituted for one in either French or German, and an Examination in any other classical language for one in Latin or Greek. The entire Examination must be passed at one and the same time; but Candidates for the Examination in October, 1892, will be entitled to all the exemptions in respect of previous Examinations by other bodies which have been already published in the UNIVERSITY CALENDAR.

The Standard of the Examination for next October will be the same as announced in the UNIVERSITY CALENDAR for 1892-93. The Examination will take place on 4th OCTOBER and three following days at Nine a.m., and Names of Candidates must be entered at the Matriculation Office *on or before* 26th SEPTEMBER.

Candidates appearing for the Examination for the first time in October next, each pay a fee of 10s. 6d., and for any future Examination a fee of 10s. 6d. Matriculation does not now exempt from payment of this fee.

Candidates who begin Medical Studies next Session must in other respects comply with the provisions of the new Ordinance.

The Examination for First-Year Bursaries in the Faculty of Medicine will be the same as for the Preliminary Examination indicated above.

Information as to Matriculation, the Curriculum for Graduation, and Examinations for Fellowships, Scholarships, Bursaries, Prizes, &c., may be obtained at the Matriculation Office, or from the Dean of the Faculty of Medicine. Full details regarding these are given in the UNIVERSITY CALENDAR, published by Mr. James Thin, 55 South Bridge, Edinburgh.

JOHN KIRKPATRICK, Secretary of Senatus.

30th August, 1892.

ROYAL VETERINARY COLLEGE,

Incorporated by Royal Charter.

SESSION, 1892-93.

THE SESSIONAL COURSE of INSTRUCTION will commence on WEDNESDAY, October 5th. The Chair will be taken by VETERINARY-COLONEL LAMBERT, C.B., and the INTRODUCTORY ADDRESS delivered by PROF. McFADYEAN, B.Sc., F.R.S.E., at One p.m.

Lectures, Clinical and Pathological Demonstrations, and General Instruction are given on the Comparative Pathology and Diseases of the Horse and other Domestic Animals, including Epizootics, Parasites, and Parasitic Affections; also on Bacteriology, Physiology, Histology, Chemistry (General and Practical), Materia Medica, Toxicology, Botany, Therapeutics, and Pharmacy, Hospital Practice, Obstetrics, Operative Surgery, the Principles and Practice of Shoeing, &c.

Students are required to attend Three Complete Sessional Courses of Instruction before being eligible for examination for the Diploma of the Royal College of Veterinary Surgeons.

The College Entrance Fee of Sixty Guineas, payable as a whole or in the following proportions:—Twenty Guineas on entry, Twenty Guineas at the end of the first period of study, and Twenty Guineas at the end of the second period of study, confers the right of attendance on all the Lectures and Collegiate Instruction during the prescribed Terms of study.

The Matriculation Examination will be held at the ROYAL VETERINARY COLLEGE, CAMDEN TOWN, N.W., on Wednesday and Thursday, September 28th and 29th, at Ten a.m. Candidates must attend on Tuesday, 27th, for the purpose of paying the fees.

A Scholarship of £25 per annum, tenable for two years, dating from October, 1892, will be awarded at the close of the Summer Term of 1893; and an additional Scholarship of the same amount in each succeeding year. A "Centenary" Scholarship, of the value of £21, will also be awarded annually.

Medals and Certificates of Merit are awarded in addition to the Coleman Prize Medals and Certificates.

Class Prizes are given in each division of the Student's studies.

Certificates of Distinction are likewise conferred on Students who pass a superior examination for the Diploma of the Royal College of Veterinary Surgeons.

A Prospectus containing the Rules and Regulations of the College and copies of the Matriculation Examination Papers set last Session will be forwarded on application to the Secretary.

RICHARD A. N. POWYS, *Secretary.*

August, 1892.

Royal College of Physicians of Edinburgh.

THE EXAMINATIONS for the MEMBERSHIP of the COLLEGE will be held during the ensuing year on the

11th and 12th October, 1892;
10th and 11th January, 1893;
11th and 12th April, 1893; and
11th and 12th July, 1893.

Candidates for the MEMBERSHIP are requested to submit their applications and Testimonials with the Secretary fourteen days before the dates on which they wish to appear for Examination.

The EXAMINATIONS for the LICENCE of the COLLEGE for the ensuing year will be held on the first Wednesday, and following days, of every month, except September and October.

Candidates for the LICENCE (as a single qualification) are requested to send their names to the Secretary one week before the dates on which they wish to appear for Examination.

For the Regulations in regard to the various qualifications granted by the College, and all other information, application may be made to the Secretary.

G. A. GIBSON, M.D., *Honorary Secretary.*

EDINBURGH, *August*, 1892.

ROYAL COLLEGE OF PHYSICIANS OF IRELAND.

LICENSES IN MEDICINE AND MIDWIFERY.

EXAMINATIONS for the LICENSES in MEDICINE and MIDWIFERY of the COLLEGE are held in the Week following the First Friday in the months of February, May, and November.

Registered Medical Practitioners of the United Kingdom, or Colonial or Foreign Registered Medical Practitioners, may be admitted for Examination, on complying with the Regulations, which may be obtained on application to the Registrar.

N.B.—Physicians or Surgeons possessing one or more registrable qualifications for a period of five years will be exempted from the Written portion of the Examination.

MEMBERSHIP.

Examinations for the MEMBERSHIP are held quarterly—in January, April, July, and October.

Licentiates in Medicine of the College alone are eligible.

Licentiates in Medicine enrolled before December 12th, 1878, may be admitted to the Membership without Fee or Examination.

FELLOWSHIP.

Candidates for the FELLOWSHIP must be Members of the College of one year's standing, and must be proposed in January or July.

DIPLOMA IN STATE MEDICINE.

Stated Examinations for the DIPLOMA in STATE MEDICINE, granted in conjunction with the Royal College of Surgeons in Ireland, are held on the Tuesday, Wednesday, and Thursday following the first Friday of the months of February, May, and November.

Application for the Regulations must be made to the Secretary of the Committee of Management, 47 Dawson-street, Dublin.

CONJOINT EXAMINATIONS.

Candidates for the CONJOINT EXAMINATIONS in MEDICINE, SURGERY, and MIDWIFERY, held by the Royal College of Physicians of Ireland and the Royal College of Surgeons in Ireland, should apply for information to the Secretary of the Committee of Management, 47 Dawson-street, Dublin.

JOHN WILLIAM MOORE, B.A., M.D., Univ. Dubl.,
Fellow and Registrar.

HALL OF THE ROYAL COLLEGE OF PHYSICIANS
OF IRELAND, KILDARE-STREET, DUBLIN.
October, 1892.

Royal College of Surgeons of Edinburgh.

FOUNDED 1505.

COPIES of REGULATIONS for FELLOWSHIP, LICENCE D.P.H. and L.D.S., containing dates of Professional Examinations for Year 1892–93, Curriculum, &c., may be had on applicaion to JAMES ROBERTSON, Solicitor, 1 George-square, Edinburgh, Clerk to the College.

Royal Colleges of Physicians & Surgeons of Edinburgh,

AND

Faculty of Physicians and Surgeons of Glasgow.

COPIES of REGULATIONS for the TRIPLE QUALIFICATION of this Board (L.R.C.P.E., L.R.C.S.E., and L.F.P. & S.G.), containing dates of Professional Examinations, for the Year 1892–93, Curriculum, &c., and also Regulations for the Diploma in Public Health, may be had on application to JAMES ROBERTSON, Solicitor, 1 George-square, Edinburgh, Inspector and Treasurer for Edinburgh; or from ALEXANDER DUNCAN, B.A., Faculty Hall, 242 St. Vincent-street, Glasgow, Inspector and Treasurer for Glasgow. Applicants will please state whether they commenced medical study *before* or *after* 1st January, 1892.

NOTICE.

THE MEDICAL PRELIMINARY EXAMINATIONS, conducted by the EDUCATIONAL INSTITUTE of SCOTLAND, will be held in the ODDFELLOWS' HALL, Forrest-road, Edinburgh, and in the FREE CHURCH TRAINING COLLEGE, Glasgow, in October, 1892, and in April, July, and October, 1893.

Particulars on application to THOMAS MORRISON, LL.D., F.E.I.S. Free Church Training College, Glasgow; or to ALEXANDER MACKAY, LL.D., F.E.I.S., 10A South St. Andrew-street, Edinburgh.

EDINBURGH, *August*, 1892.

DUBLIN

RED CROSS NURSING SISTERS' HOUSE.

THE ONLY HOME IN THE UNITED KINGDOM

Exclusively Reserved for Training of Ladies by Birth and Education as Hospital Nurses.

FOR TERMS APPLY TO LADY SUPERINTENDENT,

87 Harcourt-street, Dublin.

QUEEN'S COLLEGE, BELFAST.

LECTURES IN MEDICINE.

Anatomy and Physiology, ...	P. Redfern, M.D., F.R.C.S.L., F.R.U.I.
Chemistry, ...	E. A. Letts, Ph.D., F.R.S.E., F.C.S.
Practice of Medicine, ...	James Cuming, M.A., M.D., F.K.Q.C.P.
Practice of Surgery, ...	Thomas Sinclair, M.D., M.Ch., F.R.C.S. Eng.
Materia Medica, ...	W. Whitla, M.D.
Midwifery, ...	R. F. Dill, M.D.
Medical Jurisprudence, ...	J. F. Hodges, M.D., F.C.S., F.I.C.
Natural Philosophy, ...	Joseph D. Everett, M.A., D.C.L., F.R.S., F.R.U.I.
Zoology and Botany, ...	Robt. O. Cunningham, M.D., D.Sc., F.L.S., F.G.S., F.R.U.I.
Pathology, ...	W. H. Barrett, M.B., C.M.

THE LECTURES of the WINTER SESSION of 1892–93 will commence on Tuesday, November 1. The Summer Medical Classes will commence on May 1, except Botany, which will begin on April 1.

The Anatomical Rooms are open for the whole day, and Students are aided in their Dissections by the Professor of Anatomy, and the Demonstrator.

The Examinations for Medical Scholarships, tenable for one year, and of which two are awarded to Students in each year of the Medical Course, will commence on October 27.

Fees.—Anatomy and Physiology—1st Course, £3; each subsequent Course, £2. Demonstrations and Practical Anatomy, each Course, £3. Practical Physiology and Histology, £3 3s. Practical Chemistry, £3. Other Medical Lectures—1st Course, £2; each subsequent Course, £1.

HOSPITALS IN BELFAST.

Belfast Royal Hospital.—Clinical Fees, a Winter Session, £5 5s.; a Summer Session, £2 2s.; Perpetual Fee, payable in two instalments, £10 10s. Hospital Fee Half a Guinea for each Winter or Summer Session.

Belfast Lying-in Hospital, Clifton-street.—Fee for Six Months, £2 2s.

Ulster Hospital for Diseases of Women and Children, and Midwifery Dispensary, 11 Fisherwick-place.—Fee for Winter, or Summer Six Months, £3 3s.

Belfast Hospital for Sick Children, Queen-street.—Fee for the Session, £1 1s.

Belfast Ophthalmic Hospital and Eye and Ear Dispensary, 88 Great Victoria-street.—Fee for Winter or Summer Session, £1 1s.

Ulster Eye, Ear, and Throat Hospital, Clifton-street.—Fee for Winter or Summer Session, £2 2s.

Belfast District Lunatic Asylum.—Fee for Summer Session, £3 3s.

(By Order of the President),

JOHN PURSER, LL.D., *Registrar*

National Eye and Ear Infirmary.

FOUNDED A.D. 1814.

MOLESWORTH-STREET, DUBLIN.

Surgeons:

H. R. SWANZY, A.M., M.B., F.R.C.S.I., Ophthalmic Surgeon, Adelaide Hospital; Examiner in Ophthalmic Surgery to the University of Dublin, and to the Royal University of Ireland.

C. E. FITZGERALD, M.D., M.Ch., F.R.C.P.I.; Professor of Ophthalmic Surgery, Royal College of Surgeons; Surgeon Oculist-in-Ordinary to the Queen in Ireland.

Assistant Surgeons:

P. W. MAXWELL, M.D., M.Ch. Edin., F.R.C.S.I.; Ophthalmic Surgeon Jervis-street Hospital; Examiner in Ophthalmic Surgery to the Royal College of Surgeons.

L. WERNER, M.B., M.Ch., Ophthalmic Surgeon, Mater Misericordiæ Hospital.

Clinical Assistant:

R. K. JOHNSTON, M.D., M.Ch.; Ophthalmic Surgeon, Dr. Steevens' Hospital.

Physician to the Throat Dispensary:

RICHARD A. HAYES, M.B., Physician to Dr. Steevens' Hospital.

THIS is the oldest Ophthalmic Hospital in Ireland, and was one of the first Institutions of the kind established in the United Kingdom. It contains accommodation for 30 In-Patients, with separate day-rooms for men and women.

The Beds in this Hospital are free to the poor. The charge for Poor Law Union Patients is 1s. 4d. per day. Patients coming from the country can be admitted any day or hour if there be a vacancy.

The entrance to the Out-Patient Department is by Frederick-lane, and this part of the Institution is quite separate from the Hospital proper. There are separate waiting-rooms for men and women, a spacious consulting-room for Diseases of the Eye, and distinct waiting and consulting-rooms for Diseases of the Ear.

The Dispensary for Diseases of the Eye is open daily from 10 30 a.m. to 11 30. The Dispensary for the Diseases of the Ear is open daily from 9 30 a.m. to 10 30 a.m. Accident and urgent cases are attended to at all hours.

A Dispensary for Diseases of the Throat is open on Mondays and Thursdays from 10 30 a.m. to 11 30 a.m.

Clinical Instruction in Diseases of the Eye, including a systematic course of Lectures, is given daily at 11 a.m. by the Surgeon on duty. Eye operations are performed daily at 12 o'clock. Instruction in Diseases of the Ear is given daily at 10 a.m. Fee for Three Months' Course, £3 3s.

The Certificate of this Course is recognised by the Licensing Bodies.

Practical Afternoon Classes for teaching the use of the Ophthalmoscope, &c., are formed from time to time by the Assistant Surgeons. Fee, £1 1s.

Meath Hospital and County Dublin Infirmary.

PHYSICIANS:

ARTHUR WYNNE FOOT, M.D., Univ. Dubl.; F.R.C.P.I.; Prof. of Practice of Medicine, Royal College of Surgeons, Ireland; Diplomate in State Medicine, Trinity College, Dublin.

JOHN WILLIAM MOORE, M.D., Univ. Dubl.; F.R.C.P.I.; Professor of Practice of Medicine, Royal College of Surgeons, Ireland; Diplomate in State Medicine, Trinity College, Dublin; Registrar of the Royal College of Physicians of Ireland.

SURGEONS:

Sir GEORGE H. PORTER, Bart., M.D., M.Ch. (*Honoris Causâ*), Univ. Dub., LL.D., (*Honoris Causâ*) Univ. Glasgow; F.R.C.S.I; Surgeon-in-Ordinary to the Queen in Ireland; Regius Professor of Surgery, University of Dublin; Surgeon to Simpson's Hospital; Consulting Surgeon to Dr. Steevens's, St. Mark's Ophthalmic, the Coombe Lying-in, and National Children's Hospitals.

Sir PHILIP CRAMPTON SMYLY, M.D., Univ. Dubl.; F.R.C.S.I.; Consulting Surgeon to the National Children's Hospital.

RAWDON MACNAMARA, Senior Surgeon, Westmoreland Lock (Government) Hospital.

LAMBERT H. ORMSBY, A.B., M.D., Univ. Dubl.; F.R.C.S.; Surgeon to the National Children's Hospital; Ex-Member of the Surgical Court of Examiners, Royal College of Surgeons.

W. J. HEPBURN, F.R.C.S.E.; L.R.C.P.I.; L.R.C.P.E.

SIR WILLIAM STOKES, M.D., F.R.C.S.; Surgeon in Ordinary to Her Majesty in Ireland; Consulting Surgeon to the National Children's Hospital and Dental Hospital of Ireland, and Professor and Examiner of Surgery, Royal College of Surgeons, Ireland; Examiner in Surgery, University of Oxford.

CLINICAL ASSISTANTS:

EDWARD E. LENNON, F.R.C.P.I.; L.R.C.S.I.; Physician to Convalescent Home, Stillorgan.

JAMES CRAIG, M.B., B.Ch., Univ. Dubl.; M.R.C.P.I.; Assistant-Physician to the National Children's Hospital; Demonstrator of Anatomy, R.C.S.I.

Resident Surgeon—ALFRED WILLIAM POWER, L.R.C.P.I., L.R.C.S.I.

Pathologist—EDWARD E. LENNON, F.R.C.P.I.

THE WINTER SESSION of 1892–93 will commence on the 1st OCTOBER.

During the first three months a Course of Lectures will be delivered on Saturdays, commencing at 11 o'clock, a.m., on Instruments and Surgical Appliances. These Lectures have been specially arranged for first year's Hospital Students. The Course of Clinical Lectures will be inaugurated by an Introductory Address, to be delivered by L. HEPENSTAL ORMSBY, on Monday 3rd October, 1892.

The Hospital contains 130 beds for the reception of Surgical, Medical, Febrile, and Infantile Diseases, besides two additional Medical and Surgical Wards (in John Barber Wing) recently opened, which much increases the facilities for Clinical Instruction.

The Physicians and Surgeons on duty will visit the Hospital at Nine o'clock, a.m., on alternate days, so as to allow the Members of the Class to be in attendance at their respective Schools of Medicine at Eleven o'clock, a.m. Medical and Surgical Clinical Lectures will be delivered in the Theatre, and Instruction in Medicine and Surgery will be given at the bedside on alternate days.

Special Wards have been set apart for the reception of Children. In these Wards the Pupils will have the opportunity of studying that highly important subject—Diseases of Children.

There is an extensive Extern Department, including a Dispensary, in which the minor operations of Surgery are taught under the supervision of the Surgeon on duty, as well as a Dispensary for Diseases of the Skin.

Certificates of Attendance at this Hospital are recognised by all the Licensing Bodies in the United Kingdom. Prizes will be given at the termination of the Winter Course to the best answerers in their respective classes.

Two Clinical Assistants—a Senior and a Junior—and a Pathologist are selected from fully qualified Pupils of the Hospital, and appointed by the Medical Board at their last meeting in July of each year. The post of House Surgeon is an annual appointment. The out-going Officers shall be eligible for re-election.

Four Medical Clinical Clerks and Eight Surgical Resident Pupils are appointed annually. These offices are open to Pupils as well as to Apprentices.

The Hospital is within a few minutes' walk of the University of Dublin, the Royal College of Surgeons, the Royal University of Ireland, and Cecilia-street School of Medicine.

In connection with the Medical Department there are detached Wards in which the Continued and Eruptive Fevers can be studied.

The Students of the Hospital are the present holders of the Hospital Union Football Challenge Cup.

Further information may be obtained on application to Sir WILLIAM STOKES, F.R.C.S., Hon. Sec., Medical Board, 5 Merrion-square, North, Dublin; or to any Member of the Staff of the Hospital.

Rotunda Lying-in Hospital,
DUBLIN.

Master:
WILLIAM J. SMYLY, M.D., F.R.C.P.

Consulting Physician—JAMES LITTLE, M.D., F.K.Q.C.P.
Consulting Surgeon—[Vacant.]

Assistant Physicians— { J. H. GLENN, M.D., B.Ch., B.A.O., Univ. Dub.
J. HASTINGS TWEEDY, L.R.C.S.I., L.R.C.P.I.

THIS INSTITUTION, the largest Lying-in Hospital in the United Kingdom, consists of two distinct Hospitals—namely, the Lying-in Hospital, into which 1,200 Labour Cases are on an average admitted annually, and the Auxiliary Hospital, set apart for the reception and treatment of patients suffering from the various forms of Uterine and Ovarian Diseases; about 500 patients are received into this Hospital during each year.

There is also in connection with this Hospital a large Extern Maternity (1,600 patients were in the past year attended at their own homes), and a Dispensary for Diseases Peculiar to Women, which is open daily.

Pupils are admitted to the practice of all these departments.

Clinical Instruction in Midwifery and the Diseases of Women is given daily, and Lectures are delivered regularly during the Session on these subjects.

The DIPLOMA from this Hospital is granted to Pupils on their passing an Examination before the Master and Assistants, after a period of Six Months' attendance on the practice of the Hospital. It is recognised by the Local Government Board as a qualification in Midwifery for all Hospitals and Dispensaries under their control.

Accommodation is provided for a limited number of Intern Pupils.

Pupils can enter at any time.

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Application to be made to the Master, Assistant Physicians, or in the case of Pupil Midwives to the Lady Superintendent, at the Hospital, Great Britain-street.

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PHYSICIANS:—**Hawtrey Benson,** B.A., M.D., Univ. Dublin; F.R.C.P.; Extern Examiner in Clinical Medicine to the University of Dublin; Ex-Examiner under Conjoint System, and Ex-Censor. Royal College of Physicians; Consulting Physician for Ireland to Her Majesty's Colonial Office.

George F. Duffey, M.D., Univ. Dubl.; F.R.C.P.I.; Professor of Materia Medica, and Professor of Pharmacy, R.C.S.I.; Visitor for II. M. Privy Council of the Examinations of the Pharmaceutical Society of Ireland, &c.

SURGEONS:—**Henry Gray Croly,** F.R.C.S., M.R.C.P.I.; Ex-President of the Royal College of Surgeons; Ex-President of the Surgical Section of the Royal Academy of Medicine; Consulting Surgeon to the Monkstown Hospital; Past President of the Irish Medical Association; for many years Member of the Court of Surgical Examiners; and Examiner in Anatomy, Surgery, and Operative Surgery.

William I. Wheeler, F.R.C.S., B.A., M.D., and Master of Surgery, Univ. Dubl.; Member of Royal College of Physicians; Member of Council and Past President, Royal College of Surgeons; Past President of the Surgical Section of the Royal Academy of Medicine; formerly Member of Surgical Court of Examiners, and Examiner in Surgery and Operative Surgery, Royal College of Surgeons; Consulting Surgeon to the National Lying-in Hospital, and National Institution for the Blind in Ireland.

Henry Fitzgibbon, M.D., M.Ch. Univ. Dubl.; M.R.C.P.I., F.R.C.S.; Ex-President R.C.S.I.; Member of Council; Surgeon to the Government Lock Hospital; and Consulting Surgeon to St. John's Home.

OPHTHALMIC AND AURAL SURGEON:—**Arthur H. Benson,** F.R.C.S., M.A., Univ. Dubl.; Junior Surgeon to St. Mark's Ophthalmic Hospital; Ex-Examiner in Ophthalmic Surgery, Conjoint Examinations, Royal College of Surgeons, and Royal College of Physicians; Ex-University Examiner in Ophthalmic Surgery, Trinity College, Dublin; Member of Council, R.C.S.I.

GYNÆCOLOGIST:—**John Lilly Lane,** A.B.Trin.Coll.Dub.; L.R.C.S.I.; L. and L.N., R.C.P.I.; Ex-Assistant Physician, Rotunda Hospital; Maternity Physician, Steevens' Hospital; Fellow and Member of Council, Obstetrical Section, Royal Academy of Medicine.

ASSISTANT PHYSICIAN:—**Humphrey J. Broomfield,** F.R.C.S.I., L.R.C.P.I., L.M.; College Anatomist, Royal College of Surgeons; Fellow and Member of Sectional Council, Royal Academy of Medicine, Ireland; Member of Anatomical Society, Great Britain; Lecturer on Anatomy, late Carmichael College of Medicine; Anæsthetist to the Dental Hospital.

HOUSE SURGEON.—**Henry Croly,** M.B., B.Ch., B.A.O., Univ. Dubl.

CONSULTING PHYSICIAN:—**Sir J. T. Banks,** K.C.B., M.D.; Regius Professor of Physic, Univ. Dublin; Physician-in-Ordinary to the Queen in Ireland; Past President of the Royal Academy of Medicine in Ireland.

PATHOLOGIST:—**William R. Graves,** L. & L.M.; R.C.P.I. and L.R.C.S.I.; Pathologist to St Mark's Ophthalmic Hospital.

THE arrangements of this Hospital offer Pupils opportunities of observing disease in every form. At the morning visit, which commences at Nine o'clock daily, the nature, treatment, and progress of each case is explained at the bedside of the patient. Clinical Lectures, by the physicians and surgeons, are delivered after the Hospital visit on the most important cases under treatment, and Pathological specimens are exhibited. Surgical operations admitting of delay are performed on Tuesdays, Thursdays, and Saturdays, at 10 a.m., and notice of operations, in cases of emergency, given to the Students.

Mr. ARTHUR BENSON gives Clinical Instruction, and delivers a course of Lectures on Diseases of the Eye and Ear, including operations and ophthalmoscopic instruction.

Dr. LANE gives Clinical Instruction, and a course of Lectures, on Diseases peculiar to Women. There is also a Ward exclusively for Children, affording ample opportunities of studying the diseases of early life.

Connected with the Hospital is a largely-attended Daily Dispensary, at which the Pupils are allowed to perform minor operations under the guidance of the Surgeons; and are rendered familiar with the details of Dispensary Management, and the art of prescribing. Special Dispensaries for Diseases of the Skin and Throat, for the Eye and Ear, and for Diseases peculiar to Women are open, and in which Clinical Instruction is given in these Departments.

Surgical appliances of all kinds are made the subject of careful instruction.

Clinical Assistants to the Physicians, and Dressers to the Surgeons, are appointed from the most deserving of the class, and Certificates awarded for the faithful performance of their duties.

Medical and Surgical Resident Pupils are appointed, and Special Certificates awarded if merited. A House Surgeon is appointed annually.

The WINTER SESSION commences in OCTOBER, and terminates in APRIL; the SUMMER SESSION commences in APRIL, and terminates in JUNE.

FEES.—Nine Months' Hospital Attendance, £12 12s.; Six Months, £8 8s.; Three Months, £5 5s. Certificates of Attendance are recognised by all the Universities, Colleges, and Halls, and by the Army, Navy, and other Examining Boards. For further particulars apply to Mr. ARTHUR BENSON, F.R.C.S., 42 Fitzwilliam-square, or at the Hospital, between Ten and Eleven o'clock a.m.

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SESSION 1892-93.

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S. GORDON, M.D.; Ex-President, College of Physicians; Ex-President of the Royal Academy of Medicine in Ireland; Physician to Swift's Hospital for Lunatics.

GUY P. L'ESTRANGE NUGENT, M.D.; Fellow, Censor, and Examiner in Medicine, Royal College of Physicians; University Examiner in Clinical Medicine, Univ. Dub.

JOSEPH O'CARROLL, M.D., F.R.C.P.: Senior Demonstrator, Catholic University Medical School; Examiner in Medicine, Royal University.

ASSISTANT PHYSICIAN AND PATHOLOGIST:

THOMAS DONNELLY, M.D., F.R.C.S.; Medical Officer, No. 1 Dispensary District.

CONSULTING OBSTETRIC SURGEON:

GEORGE H. KIDD, M.D.; President of the Royal Academy of Medicine; late Master of the Coombe Lying-in Hospital.

SURGEONS:

WILLIAM THOMSON, M.D., CH.M.; Fellow, Examiner in Surgery, R.C.S.; General Secretary, Royal Academy of Medicine in Ireland; Member of the Senate of the Royal University in Ireland.

WM. THORNLEY STOKER, M.D.; Vice-President, R.C.S.; Fellow and Examiner in Surgery, Royal University; Surgeon to Swift's Hospital for Lunatics.

THOMAS MYLES, M.D., F.R.C.S.; Professor of Pathology and Member of Council, Royal College of Surgeons.

OPHTHALMIC SURGEON:

ARCHIBALD JACOB, M.D., F.R.C.S.; Professor of Ophthalmic Surgery in the Royal College of Surgeons, Ireland; and Secretary to the Council.

THROAT SURGEON:

ROBERT H. WOODS, M.B., B.Ch.; Demonstrator of Anatomy, Trinity College, Dublin.

CONSULTING OPHTHALMIC SURGEON:

C. E. FITZGERALD, M.D., F.R.C.P.; Oculist to the Queen in Ireland.

ASSISTANT SURGEON—J. WARBURTON WILKINSON, L.R.C.P. & S., Edin.

RESIDENT PHYSICIAN—F. W. CONDON, L.R.C.S., L.R.C.P.

RESIDENT SURGEON—W. H. BEST, L.R.C.S., L.R.C.P.

The Course of Clinical Instruction will commence on Monday, OCTOBER 3rd, 1892.

DURING the past year, 1,830 patients were admitted; 16,509 out-patients were also treated; making in all 18,339 cases.

THE TRUSS ESTABLISHMENT, for the distribution of Trusses to the poor, is connected with these Hospitals.

FEVERS—There will be a distinct Course of Lectures and Clinical Instruction in Fevers.

OPERATIONS are performed on Monday and Wednesday Mornings only, except in case of emergency.

OPHTHALMIC SURGERY.—A Course of Practical Instruction in Ophthalmic Surgery will be given. Fee for the Certificate, Three Guineas.

PRACTICAL PHARMACY, a Course in which is now required by the Licensing Bodies, is taught under the superintendence of the Apothecary of the Hospitals.

A Resident Physician and a Resident Surgeon are appointed each year, and are paid for their services.

CLINICAL CLERKS.—Eight Resident Clinical Clerks are appointed each half-year, and provided with furnished apartments, fuel, &c., &c. *These appointments are open not only to advanced Students as formerly, but also to those who are qualified in Medicine or Surgery.* The Dressers are selected from among the best qualified of the pupils, without the payment of any additional fee.

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The Medical School of Trinity College, of the Royal College of Surgeons, and of the Catholic University, in which all the Courses of Lectures required by the different Colleges are delivered, are connected with these Hospitals through the Medical Staff.

HOURS OF ATTENDANCE.—The Hospitals are visited at Nine o'clock a.m., daily, by the Physicians and Surgeons.

CLINICAL INSTRUCTION.—Two Clinical Lectures are delivered in each week, in addition to the usual Bedside Clinical Instruction which is given daily.

PRIZES.—Special Prizes are awarded at the close of each Session.

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Students who take out their entire Clinical Course in these Hospitals are eligible for appointments as Resident Clinical Clerks without extra fee.

FEES FOR RESIDENT CLINICAL CLERKS, who have not taken out their full Clinical Course at these Hospitals:—Winter, 9 Months' Certificate (*if required*), £12 12s.; Six Months' Residence, £8 8s.; Summer, Three Months' Certificate (*if required*), £5 5s.; Six Months' Residence, £8 8s.; including furnished apartments, fuel, light, attendance, &c.

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Junior Surgeon—ARTHUR H. BENSON, M.A., M.B., Univ. Dub., F.R.C.S.I.; Ophthalmic and Aural Surgeon to the City of Dublin Hospital; Ex-Examiner in Ophthalmic and Aural Surgery to the Royal College of Surgeons.

Assistant-Surgeon—F. ODEVAINE, F.R.C.S.I.; Examiner in Ophthalmic and Aural Surgery Conjoint Exam., F.R.C.S.I. and R.C.P.I.

Resident Surgeon—ROBERT J. MONTGOMERY, M.B., B.Ch., Univ. Dub.; Examiner, R.C S.I.

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The Surgeon on duty attends from 9 till 12 daily.

Clinical Lectures are delivered at 11 o'clock on Mondays, Tuesdays, Thursdays, and Fridays.

Operations are performed on Wednesdays and Saturdays at 11 o'clock.

Fee for Three Months' attendance, £3 3s. Special Classes for instruction in the use of the Ophthalmoscope and the performance of Ophthalmic Operations are held during the Session.

For further particulars apply to Mr. STORY, 24 Lower Baggot-street; Mr. ARTHUR BENSON, 42 Fitzwilliam-square, Dublin; or to Mr. ODEVAINE, 14 Harcourt-street.

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OF THE

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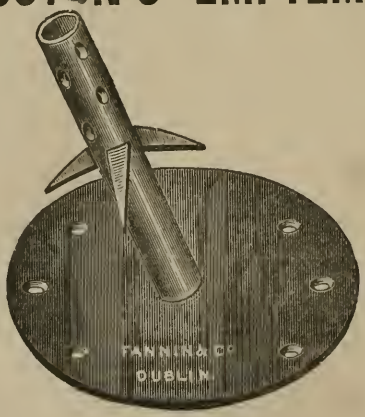

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PART I.

ORIGINAL COMMUNICATIONS.

ART. XI.—*The Victorian Era, the Age of Sanitation.*[a] By SIR CHARLES A. CAMERON, Ex-President, Diplomate (*Honoris Causâ*) in Public Health, and Professor of Chemistry and Hygiene, R.C.S.I.; President of the British Institute of Public Health; Examiner in Sanitary Science, Royal University; Member of Army Sanitary Committee; D.P.H. Camb.; Fellow of the College of State Medicine; Medical Officer of Health for Dublin, &c., &c.; President of the Congress of the Sanitary Institute.

MY first duty, as President of this Congress, is to tender on behalf of the Sanitary Institute most cordial and hearty thanks to the Mayor, Municipality, and people of this ancient town for the kind reception they have accorded to their visitors. This town has no reason to dread the scrutiny to which it will be subjected by the swarm of hygienic critics attracted by this Congress, for it would be indeed a happy day for these countries if all their towns were as healthy as Portsmouth, which in this respect is only exceeded amongst the great towns by three—namely, Norwich, Derby, and Brighton. In the period 1881–90 the average death-rate in the 28 largest towns of England was 23; in Manchester

[a] An Inaugural Address delivered at the Sanitary Congress, Portsmouth, 12th September, 1892.

it was 29·6; in Portsmouth it was 19·6; in Brighton 19·0; in Derby 19·3; in Norwich 19·1. These are the death-rates, corrected by age and sex distribution and by the results of the census of 1891.

My next duty is to express my thanks to the Council of the Sanitary Institute for the honour which they have done me in selecting me to preside at this important Congress, in which are assembled so many of the most distinguished sanitarians of these countries, and to whom I am sure my arguments will seem trite and my facts threadbare. I believe that I am the first Irishman who has been invited to preside at any of the great annual gatherings held under the auspices of the Sanitary Institute. Perhaps I may be permitted to accept the fact as a compliment paid, not so much to so humble an individual as myself, but rather to the country from which I come, and which, indeed, has of late years no reason to complain of being unnoticed by the people on this side of the channel.

The reigns of many of the sovereigns of these countries have been rendered famous by successful wars, by great acquisition or loss of territory, by religious and political revolutions, by the works of intellectual giants, such as Shakspeare, Bacon, and Newton. The prosperous and prolonged reign of our beloved Queen has been as pregnant of great events as that of any of her royal predecessors, but the happiest and most characteristic feature of her glorious reign of five and fifty years is the remarkable improvement which, during that period, has taken place in the health and comfort of her people. The Victorian era is the age of sanitary and social reforms—of diminished sickness, of increased longevity. Never has the British people been so free, so happy, so rich, so powerful, so educated, so moral, so philanthropic, so healthy, as during the Victorian era.

From the earliest ages, since the people of these islands emerged from barbarism, some attention was given to the subject of public health, and a few enactments, more or less relating to the health of the people, may be found on the Parliamentary Statute Books and amongst the edicts of the sovereigns previous to the nineteenth century. Their provisions were, however, rarely enforced, and if all the Sanitary Acts passed before Her Majesty's reign were collected, they would form a volume of no great size. Let us see what the Victorian age of sanitary legislation and literature has produced.

The first important official report in reference to the health of the people was issued in 1842, under the title of "Report of the Sanitary Condition of the Labouring Population of Great Britain;" it was soon followed by legislative action. A Factory Act was passed in 1844, and this was the first of the many general statutes more or less relating to the public health enacted during Her Majesty's reign. In 1845 a Nuisances Removal Act was passed, and in 1848 the well-known Nuisances Removal and Diseases Prevention Act was put on the Statute Book. In 1866 a useful "Sanitary Act" came into operation, and was followed by a Public Health Act in 1872. The Common Lodging Houses Act of 1851 was the first that dealt specifically with the dwellings of the poorer classes of the community. These six Acts of Parliament have all been amended and extended—some of them a great many times—and they and the amending Acts constitute perhaps the most comprehensive code of sanitary laws ever enacted in either ancient or modern times. In addition to these Sanitary Acts, other important ones have been passed in relation to burial grounds, mines, town parks and open spaces, the adulteration of food and drugs, the diseases of animals used as food, the sale of milk, margarine, and poisons, the pollution of water, trade nuisances, the construction and management of bakehouses, the storage of explosives and petroleum. Numerous private Acts of Parliament, obtained by local authorities, are either altogether sanitary or contain clauses relating to sanitation.

Numerous as are the volumes of sanitary laws, they are exceeded by those containing the evidence in relation to sanitary matters given before Parliamentary committees, royal commissions, and "departmental" committees, together with the reports thereon. These "blue books" constitute an immense library, in which voluminous details are given in relation to the dwellings, occupations, food, water supplies, diseases and medical relief of man; and to hygiene and municipal administration of towns. The blue books issued from the Medical Department of the Local Government Board and the Army and Navy Medical Departments are numerous and valuable.

A third department of sanitary literature consists of the annual and special Reports of the medical officers of health, which may be numbered by thousands. They are the annals of sanitary progress. Until very recently they dealt only with the health of towns; but in the future we may expect valuable Reports on purely rural

districts from the county medical officers of health. Until now nothing worth boasting of has been done to improve the status of health in the open country; but the last Local Government Act has created for the rural districts sanitary organisations similar to those which have long existed in towns. We might venture to hope that under the new *regime* of county councils, the well-known rural death-rate of 17 per 1,000 may be reduced to 16 or less.

Not so numerous as the Reports of the medical officers of health, but not less interesting, are the Transactions and Journals of the Sanitary Institute and similar organisations. The Journal of the Statistical Society is rich in sanitary literature. The transactions and journals of medical sanitary societies and of the public health sections of medical associations contain numerous contributions to hygienic literature.

Public Health has its representatives amongst the periodicals of the day—for example, the *Sanitary Record*, *Hygiene*, the *Health Record*, &c. It has also special departments assigned to it in most of the purely medical journals. In May of the present year a welcome addition to our periodical literature appeared in the shape of the *Journal of Pathology and Bacteriology*, in which, judging by the names of intending contributors on its title-page, we may expect some brilliant writing on the causation and prophylaxis of microbial diseases.

Prior to the Victorian age there was only one really comprehensive and philosophical book on hygiene published in Great Britain; this was the "Philosophy of Health," by Dr. Southwood Smith, which appeared in 1838, and which still may be read with advantage. For some years past dozens of books, more or less relating to public or private hygiene, issue annually from the press; many of them of large size—as, for example, the ponderous book by Stevenson and Murphy, issued in the present year. and which, though only the first volume of a treatise, numbers 1018 large pages.

There is no more convincing evidence that this is the age of sanitation than the fact that the books on the subject published within the Victorian era would furnish a large library, whilst those of an older date would hardly garnish a single bookshelf.

The higher estimation of Preventive Medicine, which lately prevails amongst the professors of the healing art, is shown by the recent institution of degrees, diplomas, and certificates in public health, state medicine, and sanitary science, by the universities and

medical and surgical corporations. I am proud, as a citizen of Dublin, to be able to state that the University of that city was the first to create a Diploma in State Medicine. This was in the year 1865. Its example has been followed by all the other medical licensing bodies, and there are now some hundreds of holders of sanitary qualifications. I may also be permitted to say in this connection that the Professorship of Hygiene, which I hold in the Royal College of Surgeons, Ireland, was the first instituted in Europe, with, I believe, one exception—namely, that in the Medical School of Montpellier. The Chair of "Hygiene or Political Medicine" of the Irish College of Surgeons was established in 1844.

Quite recently some of the medical licensing bodies have decided to require of candidates for their ordinary diplomas evidence of study in sanitary science; and for the public health diplomas it must be shown that the candidates have worked in a chemical sanitary laboratory, and have studied the duties of a health officer under a medical officer of health. It is a good sign of the times to find that the Medical Act of 1887 made public health diplomas registrable qualifications.

In the future no one will be eligible to act as medical officer of health for a town of 50,000 inhabitants and upwards unless he holds a registrable qualification in public health.

Before the Victorian era there were few sanitary laws worth administering, and consequently no *raison d'être* for local boards or officers of health. Some drainage works were carried out by the town and country authorities, and a few attempts were made to improve the water supplies of urban districts. The filth produced in towns had to be got rid of in some way; on the other hand, people were taught to be too economical in the combustion of fuel by the imposition of a rate on hearths, and they were encouraged to exclude daylight by having to pay a window tax.

The insanitary state of British towns was made painfully evident by the invasion of cholera in 1831. According to official statistics there died from cholera in 1831–2, 31,376 persons in England and Wales, and 21,171 in Ireland. In 1848 cholera reappeared in England and Wales, and destroyed 53,273 lives. In 1853, 20,097 deaths were ascribed to cholera, of which about one-half occurred in London. In 1866 it re-appeared, but with less fatal results. The deaths in England attributed to it were 14,378, in Ireland 2,501, and in Scotland 1,470; total, 18,149. This

lessened mortality was not due to the milder character of the disease, but rather to the towns being less filthy than they were during previous visitations. On the Continent so virulent and widespread was cholera at this time that it is computed it caused more than one million of deaths. In Italy alone it carried off 120,000 victims; and in the small countries of Holland and Belgium it caused 50,000 deaths.

When cholera first appeared in Dublin in 1831 the sanitary state of the city was deplorable, and consequently 5,632 out of a population of a quarter of a million perished. When it came again to Dublin in 1849, the condition of the city was not so bad, and the victims to cholera were only 1,664. In 1866 Dublin was for the third time visited by cholera, and on this occasion 923 deaths were caused by it. Sanitary matters were in 1866 better than in 1849: and were the disease again to invade Dublin, I venture to hope that it would be much less fatal than in 1866. I think that in British towns generally Asiatic cholera will not again cause such ravages as it did in 1831, 1848, 1854, and 1866. I am not very apprehensive that the epidemic which now rages on the Continent of Europe—in which it has appeared seventeen times since 1829—will extend to our islands.

It was probably the ravages caused by cholera in 1831–2, and more especially in 1849, that first awakened the public to the necessity of improving the hygienic conditions of towns. A committee appointed to inquire into the sanitary condition of the metropolis reported in 1848 that no substantial improvement had taken place in the state of the back streets, lanes, alleys, and courts since the cholera epidemic of 1831–2. The committee expressed an opinion that if the disease were again to visit London, it would spread as extensively and prove as fatal as it did in the former visitation. This prediction was unfortunately but too soon verified; but in the meantime the era of sanitary activity was initiated by the passing of the Public Health Act of 1848. This Act, though it permitted and did not compel sanitary reforms, was a useful one, and was availed of to some extent, as was also the case with the Local Government Act of 1858.

An important agency in promoting sanitary legislation were the valuable Reports—issued in 1842 and 1845—of the Commission on the Health of Towns.

The powers conferred upon health authorities, at first almost invariably permissive, gradually became more of a mandatory

character. What a difference, is there not, in the significance of these two words "shall" or "may" in a sanitary statute? The exercise of the powers vested in local authorities has resulted in the expenditure of an enormous sum of money. It has mainly been employed to secure pure water supplies, to construct drains, to pave streets, to thin out densely-inhabited places, to clear unhealthy areas, to erect dwellings of a healthful kind for the working classes, to provide public abattoirs, baths and wash houses, town-parks and open spaces, to build and maintain fever hospitals, to adopt improved methods of filth disposal. The maintenance of staffs of sanitary officers has caused a large addition to the taxation of towns. Formerly very few towns were provided with even a single inspector of nuisances. In 1864 Dublin had but one sanitary officer, now it has nearly fifty. It must be admitted that the administration of the sanitary laws involves a substantial outlay of money. It is, however, money well expended, giving a good return in the form of a lessened sickness rate and reduced mortality. It diminishes pauperism, by preserving the health of the working man. The death of the labourer by a preventable disease may have the effect of sending his children into the workhouse. Sanitation has greatly reduced the mortality caused by preventable diseases. We pay enormous sums for an army and navy to preserve us from foreign foes, to protect our liberty, property, and lives. But there are foes our brave sailors and soldiers cannot defend us from—enemies that kill annually far more than ever fell upon the battlefields during our greatest wars. These enemies are the infective diseases, which are not necessarily concomitants of human nature, and the attacks of which may be, and some day shall be, warded off. We require an army of sanitarians to guard us against those deadly foes. They who vanquish them achieve victories far more glorious than ever warrior won. They are triumphs which are not followed by the groans of the wounded, the wail of the widow, or the cry of the orphan. The trophies of the conquest are increased health, life, and wealth to man.

As the soldier to be effective must be skilfully trained to the use of arms, and grounded in the knowledge of tactics and strategy, so should the sanitarian be thoroughly instructed in the principles of hygienic science, and capable of using the necessary instruments of research. It is not long since every medical man was considered perfectly competent to act as an officer of health, but now the model medical officer of health is expected to know more than

the ordinary practitioner. He is expected to be familiar with the use of meteorological instruments, to have some knowledge of geology, to understand sufficient engineering as to know how sewers and drains should be constructed, trapped and ventilated. He may be called upon to suggest how the noxious effluvia from certain factories may be rendered innocuous. He is often requested to pronounce as to the fitness or unfitness of the flesh of animals as food for man, and he cannot do that properly if unacquainted with the diseases of those animals. Not unfrequently he acts as an analyst and examines potable water, determines the amount of carbonic acid in the air of places suspected of being unhealthy, and does other sanitary-chemical work. As yet he has not been called upon to do much as a bacteriologist, but in the immediate future the candidate medical officer of health will be expected to have a thorough knowledge of the pathogenic microbes, to be able to determine the number of micro-organisms per cubic centimetre of water, and to be an adept in the "cultivation" of bacteria, bacilli, spirilla, *et hoc genus omne*.

The medical officer of health will be something more than a physician and surgeon—he will, in a sufficient degree, be a bacteriologist, a chemist, a veterinarian, a geologist, an engineer, a statistician, and, so far as the sanitary statutes are concerned, a lawyer. Already several medical officers of health have taken the barrister's degree.

Until quite recently there were no special arrangements made in the medical schools for teaching sanitary science; but this defect is being remedied, especially as regards the sanitary analysis of air and water, and the chemical and microscopical examination of food and drugs. Courses of lectures on Hygiene and State Medicine are also delivered, but at present not in all the medical schools. On the Continent bacteriological laboratories have been established in nearly all the universities and seats of medical education, and in the great Pasteur Institute at Paris the methods of identifying and "cultivating" microbes may be studied. In these countries there is no great institution altogether devoted to researches into the intimate nature of those organisms, invisible to the unassisted eye, apparently almost without structure, yet endowed with a virulent potentiality rivalling that of strychnin or prussic acid. How marvellous—is it not?—that we discover upon the confines of the visible world the causes of some of the most fatal diseases of man and of his subjects in creation!

There are few natural phenomena more wonderful than the enormous dynamic effect produced upon organised matter by these microscopic objects. A few, perhaps even one, of them introduced into the body of the largest animal may quickly raise its temperature and deprave its vital functions, disorganising the whole living mass, which exceeds in dimension its enemy by countless billions. Shakspeare, whose genius was prophetic as well as sublime, anticipated the modern description of infective matter when he spoke of it as that "whose effect holds such an enmity with blood of man that, swift as quicksilver, it courses through the natural gates and alleys of the body, and with a sudden vigour it doth posset and curd, like eager droppings into milk, the thin and wholesome blood."

Some provision for the study and teaching of bacteriology has been made by Cambridge University, the Colleges of Physicians and Surgeons, London and Edinburgh, the College of State Medicine, the Brown Institute, and, but to no great extent, in a few other places. We have no place which can be compared with the Pasteur Institute in Paris; it is the largest and best equipped bacteriological laboratory in the world. The British Institute of Preventive Medicine, established in 1890, proposes to found a bacteriological laboratory and accessories, on a scale equivalent to that of the Pasteur Institute. For this purpose it asks the rich and generous British public to subscribe £100,000. Some handsome donations, including one of £2,000 from Mr. Mond, have resulted from this appeal; and let us hope that British philanthropy, to which we are indebted for many noble gifts to the nation, will endow an institution, the objects of which are eminently for the benefit of man.

Hardly less important than the medical officers of health, and the medical inspectors of the Local Government Board, are the rank and file of our sanitary army—the inspectors, or rather *discoverers*, of nuisances. Formerly anyone was considered competent to do the work of the sanitary inspector, and persons who had been failures in other walks of life were often provided for by appointing them to be nuisance inspectors. This happily is now as a rule an exploded practice. It is realised that the person who has to discover sanitary defects in dwellings, public institutions, factories, schools, and other places, should have some acquaintance with the laws of health. The Sanitary Institute never did a better thing than the institution of their certificates for inspectors of

nuisances, and also for local surveyors. Since 1877 no fewer than 1,312 candidates for the sanitary certificate have been examined, of whom 825, or 63 per cent., were successful. During the same period 78 local surveyors received certificates, and 113 were unsuccessful.

During the Victorian age many millions of money have been spent in the execution of sanitary works, and in the maintenance of a legion of sanitary officers. Have the results of this vast expenditure of money and human labour been such as to satisfy us that it has not been a waste of our pecuniary resources and our time? Do they encourage us to further outlay and increased exertions? I think both queries may be answered affirmatively. That money spent to improve the sanitary condition of places has not always been judiciously laid out is quite true, but the same may be said of expenditure for most other public purposes. It must, moreover, be admitted that the provisions of many of the Acts relating to health have not been fully carried out, and that many local sanitary authorities, especially in rural districts, have lamentably failed to perform the duties, whether permissive or mandatory, entrusted to them by Parliament. It would not be difficult to discover places where the sanitary statutes are almost or wholly dead letters. They would indeed be dead letters in more places than they are were it not for the powerful influence exercised upon public opinion and on the conduct of the authorities by such organisations as the Sanitary Institute, and by the pen and voice of earnest sanitarians. There are hundreds of towns and villages in these islands which are still unprovided with proper arrangements for drainage and filth disposal, and which are dependent upon the scanty supplies of water, often of bad or inferior quality. On the whole, however, it must be admitted that the sanitary powers confided to the local authorities have been largely put in force. Let us see what good has resulted therefrom.

I do not propose to institute, except in the briefest manner, comparisons between the England of to-day and the England of a century or two ago. From 1700 to 1750 the death-rate in London was so high that population stagnated. In the former year the inhabitants numbered 665,200, and in the latter year 653,900. During this period the deaths were in the ratio of about 1 per 30 persons living. By 1801, the population had crept up to 777,000, and the deaths had fallen to 1 in 41 persons living.

This great improvement in the state of public health in London was not, except to a trifling extent, the result of sanitary legislation. People were becoming more enlightened on many matters affecting their health, partly owing to a more general knowledge of chemistry, physiology, and other sciences relating to man and his surroundings. When those entrusted with the conduct of public affairs became aware how much the health of people was affected by bad water, by foul emanations from cesspools, and by too great a density of population, they began to secure supplies of pure water, to construct proper house drains and street sewers, to remove systematically filth from houses, and to widen streets. The promulgation of the natural laws of health preceded the enactment of laws of health by the State. Jenner's discovery of prophylaxis in smallpox had for its corollary the vaccination laws. The chemical analysis of water was the basis of Acts of Parliament relating to water and rivers.

Until about 40 years ago common-sense was the only motive power which impelled sanitary reforms in London and elsewhere. It was not inoperative, for early in this century the grosser defects in public and private hygiene had been recognised, and, to a great extent, remedied.

In Rickman's Report to Parliament on the Census of 1811, he gives the following estimates of the death-rates in England:—

In 1780	-	-	1 death	per 40	persons living.
„ 1790	-	-	1 „	45	„
„ 1800	-	-	1 „	47	„
„ 1810	-	-	1 „	49 or 50	„

If these estimates are reliable, it would seem that after the great improvement in the public health in the latter part of the eighteenth and early portion of the nineteenth century no sensible change for better or worse took place for about half a century. According to Rickman, the death-rate in 1810 would be about 20 or 21 per 1,000 persons living.

In Dr. Newsholme's excellent work on "Vital Statistics" he gives the death-rate for males in the period 1838-1854 as 23·28 per 1,000 males living, and the rate for females at 21·65. It would therefore appear that the mortality of the population had increased as the century grew older. Probably the earlier statistics, collected before the Act for the registration of births, deaths, and marriages, were not quite accurate; no doubt some deaths escaped record. It would, however, seem that from 1810 to 1854—making

some allowance for defective registration—there was no reduction in the death-rate. Even if we take the period 1851–60 we find no improvement: the deaths were in the ratio of 22·25. In 1861–70 the rate was 22·5, or 0·25 more than in the previous decade. It must, however, be borne in mind that from the beginning of the century population was increasing rapidly in the towns—which must always, at their best, be less healthy than the country—whilst in the rural districts population remained stationary or declined. It was therefore something to boast of, that although the towns of England were increasing in population at the rate of from 200,000 to 300,000 annually, the death-rate of the whole country had not sensibly increased.

In 1872 a Public Health Act was passed, which was amended and improved in 1875. This Act has been one of the most valuable ever passed, and to its operation must be reasonably attributed the improvement of the public health during the last two decades.

During the ten years ended in 1850 the mean annual death-rate in the Metropolis was 24·8 per 1,000 persons living; in 1851–60 the rate was 23·4, and in 1861–70 it was 24·1 During these thirty years there was no marked improvement in the sanitary state of London. Now comes the epoch of sanitary activity: in the period of 1871–80 the death-rate fell to 22·5, and in the decade ended in 1890 it further declined to 20·5, or 4·3 below the rate for the period 1841–50. If the death-rate in Greater London was as high during the years 1881–90 as in the period 1841–50, nearly 50,000 more deaths would have taken place.

Early in the century the provincial towns were, with few exceptions, more insanitary than London. In reading the local literature of these places one often comes across descriptions of the abodes of human beings which are almost incredible, and which happily would now apply to very few English towns. In a pamphlet, entitled "Religion and Crime," by Mr. John M. Morgan, and published by Longmans, London, in 1832, a dreadful description of Bristol is given. The author states that 566 families occupied each only *part of a room*, and that 2,224 families lived each in a single apartment. In a Report upon the sanitary state of Nottingham, in 1839, by Mr. Falkiner, it is stated that there were between seven and eight thousand houses in that town placed back to back, without any thorough ventilation, and unprovided with the proper appliances of civilised life. It is not surprising that in Nottingham 99,017 cases of fever occurred in the years 1835–37; but

it is surprising to find that notwithstanding the acknowledged unhealthiness of back-to-back houses, nearly 10,000 of them still exist in Manchester. Need we then wonder that the mortality of the inhabitants of that great city exceeds that of every other of the great towns of England.

Mean annual death-rate in England and Wales:—

Period		Males	Females	Total
1841–70	-	23·3	21·5	22·4
1871–75	-	23·3	20·7	22·0
1876–80	-	22·1	19·5	20·8
1881–85	-	20·5	18·3	19·4
1886–90	-	20·0	17·8	18·9
1891	-	21·5	19·0	20·2

In 1851–60 the death-rate in large towns was 24·7, and in the country 19·9. In 1882–91 the rate in towns was 20·4, and in the country 17·5.

The year 1891 was an unhealthy year, as will now and then be the case; but even in that year the mortality was much below that of the period 1841–70. If it were equal to the mean rate for that period there would have been 63,749 more deaths during the year.

The low death-rate in England is all the more remarkable when we consider the very large proportion of the population located in towns. In 1892, 18,931,070 persons lived in towns, and 10,472,276 in the country; total, 29,403,346.

Whilst the death-rate of London has been declining, the population of the great city has been increasing and concentrating. In 1841 the density of its population was moderate—*i.e.*, 25 persons per acre; but in 1891 there were 56·5 persons per acre. Large and dense populations are as a rule more unhealthy than small and widely scattered ones. In London the unfavourable influence of the closer approximation of its inhabitants is much more than compensated for by the great improvements effected in the general hygienic conditions of the city.

In every other large country in the world the rural population greatly exceeds the urban; in England it is the reverse, 19 out of its 29 millions live in the big towns. It is surprising that, under such conditions, the whole population of England have a greater longevity than the French, Germans, Russians, Italians, and Spaniards. It is observed that whilst the mortality of males

under 35 years of age and females under 45 years has been largely reduced, the mortality of males over 35 years and of females over 45 years has increased. I can hardly believe that this is due to the elder persons being now more than formerly injuriously affected by insanitary conditions. Much more likely is it the result of the preservation of the lives of delicate or weakly children, who, developing into adults of poor physique and low longevity, lower the average death-rate of the adult classes; for as Dr. Newsholme has truly said, the same causes which have lowered the mortality of children and young people have also improved the average health of those who survive. It is at least certain that the mean expectation of life as it is termed—that is, the probable duration of a life at birth—has been largely increased within the last 25 years. As women and children are most exposed to the bad effects of insanitary dwellings, it seems probable that their improved health is due to improved domestic hygiene. Men are exposed to greater risks of loss of health and life than women or children. Accidental deaths are more frequent with them, and their occupations are often of an unhealthy kind. For one woman in the accident ward of a hospital there are half a score of men.

With respect to Scotland, I gather from the Annual Reports of the Registrar-General of that country, the latest of which refers to 1889, the following facts:—

The mean death-rate in Scotland during the period 1855-64 was 21·3 per 1,000. The rate remained much the same until the period 1880–89, when it fell to 19·3. In 1855–64 the rate in the large towns was 27·76; in the ten years ended 1889 the rate was only 22·78.

With respect to Ireland, the great Public Health Act, under which the sanitary authorities now work, came into force in 1878. In the years 1871–80, the average annual death-rate per 1,000 of mean population was 18·3, and in the ten years ended in 1890, 17·9. During these periods the rates in the Poor Law Unions, or Superintendent Registrars' Districts, containing towns which had in 1871 or 1881 a population of 10,000 or upwards, were 22·5 and 22·6 respectively. These figures would seem to indicate some progress in the rural districts, and a slight retrogression in the urban districts. There is, however, strong reasons to believe that until 1879 registration of deaths was very defective in Ireland. The 191st section of the Public Health (Ireland) Act, 1878, "provided that the clerk, or secretary or registrar of every

burial board and cemetery company or authority, having charge of any burial ground, shall make, or cause to be made, at such times and in such manner as the Local Government Board may direct, a return of the names, addresses, dates of death, and causes of death, so far as ascertained by him, of the persons whose bodies have been interred in such burial ground, to the registrar of the district in which such persons resided at the dates of their deaths respectively." As the clerks to the burial boards are paid for these reports, it is highly probable that they never fail to make them. It was found in Dublin that the returns of burials exceeded by 10 per cent. the registered deaths, from which it follows that previous to 1879 a large number of deaths was not registered, and the published death-rate was 10 per cent. or so below the true rate. It is probable that in many foreign and British Colonial cities the published death-rates are not the true rates—some of them are suspiciously low.

In the case of the Irish urban districts it is highly probable that the registration of deaths was much more accurate in 1881–90 than previously; hence it follows from the figures which I have given that the true death-rate was less in 1881–90 than in 1871–80.

The general death-rate in Dublin declined in the period 1881–90, 15·59 per cent. as compared with the previous ten years, and the decline in the zymotic death-rate was 44·05 per cent.

There is no department of State Medicine of greater utility than vital and mortal statistics. But for their use public attention could not be directed to abnormal mortalities, with the view of reducing them to reasonable proportions. What an important lesson—is it not?—to us to know that in the country only 17 persons die yearly out of every 1,000 persons living, whilst in towns from 19 to more than 30 perish annually! A knowledge of such facts as these—which we learn from the statistician—has been the principal and most successful argument used in pleading the cause of sanitary reform. We shall not be satisfied, says the sanitary enthusiast, until there shall be a uniform death-rate in town and country. Much has been done in rendering the conditions of town-life more healthy than they were, but vast is the task still to be accomplished. We see that four more persons per 1,000 die in the town than in the country; but the difference between urban and rural mortality is even greater than this. The population of the whole country is distributed into groups according to age.

The death-rate in the different groups is ascertained; in some it is very high, in others very low. For example, from 10 to 15 years the mortality per 1,000 is less than one-half as compared with the ages 25 to 35. In the towns the population have a larger proportion of persons whose expectation of life is longest. Brighton and Plymouth are the only exceptions to this rule. Females live longer than males, therefore a larger preponderance of females in a town than in the country at large lowers the apparent death-rate of the former. The "recorded" or crude death-rate in towns is corrected for what in statistical terminology is termed "age and sex distribution." In 1890 the recorded death-rate of Portsmouth was 19·59, and its corrected death-rate 20·18. In Manchester the crude rate was 30·57, and the corrected one 34·06.

The vital and mortal statistics of towns being the principal means by which their actual and relative sanitary states can be ascertained and compared, it is desirable to collect them accurately. Mortal statistics are useless unless we know the number, ages, and relative proportion of males and females of the population to which they refer. This information is obtained only once in ten years. The increase of population (if any) between the year in which a census had been taken and that which next followed having been ascertained, it is assumed that a similar increase goes on subsequently to the second census. The census of 1891 proved that the estimates of population for the previous ten years were very inaccurate in the case of several towns. For example, the annual increase of population in Belfast was estimated to be 1·3 per cent. per annum, but it proved by the census of 1891 to be 2·5 per cent. On the other hand, Liverpool was found to have had its population in 1891 over-estimated by nearly 100,000. A comparison in 1890 of the death-rates of Belfast and Liverpool would have been unjustly to the disadvantage of the former. In the last Annual Summary of the Registrar-General of England of births and deaths in towns, the usual correction for the death-rates is not given, owing to the numbers of the population according to the census of 1891 not having been revised. I have, using the census returns of 1891, recalculated and corrected for age and sex the death-rate in the English (28) towns for the period 1881–90, and find it to be as follows:—From all causes, 23; from the principal zymotic diseases, 3·1. These rates are higher than the corrected rates published during the decade. I give a table

showing the correct death-rates in English and Irish towns for this period, and some previous ones.

	England & Wales	Dublin	Belfast
All ages - -	1,000·00	1,000·00	1,000·00
Under 5 - -	135·55	108·61	123·05
5 to 20 - -	327·05	289·43	326·03
20 to 40 - -	295·02	345·78	332·28
40 to 60 - -	158·60	183·63	156·43
60 and upwards -	73·78	72·55	52·21

Recorded and Corrected Death-rates per 1,000 *in Twenty-eight Great Towns in* 1890.

Towns in the order of their corrected Death-rates	Recorded Death-rate	Corrected Death-rate	Comparative Mortality Figure
England and Wales - - -	19·19	19·19	1000
England and Wales less the twenty-eight Towns - - -	18·19	17·79	927
Twenty-eight Towns - -	21·35	22·75	1186
Nottingham - - - -	16·47	17·46	910
Brighton - - - -	17·76	18·29	953
Leicester - - - -	17·92	18·77	978
Derby - - - - -	18·51	19·25	1003
Hull - - - - -	19·25	19·86	1035
Bristol - - - - -	19·21	19·88	1036
Norwich - - - -	21·06	20·14	1050
Portsmouth - - - -	19·59	20·18	1052
Huddersfield - - - -	18·93	20·84	1086
Birkenhead - - - -	19·69	21·06	1097
London - - - -	20·30	21·55	1123
Birmingham - - - -	20·74	22·12	1153
Plymouth - - - -	22·42	22·20	1157
Wolverhampton - - -	21·82	22·50	1172
Bradford - - - -	20·39	22·52	1174
Cardiff - - - - -	20·76	22·53	1174
Oldham - - - -	21·23	23·56	1228
Sunderland - - - -	22·72	23·66	1233
Leeds - - - - -	22·63	24·19	1261
Salford - - - - -	22·36	24·34	1268
Halifax - - - -	22·46	24·40	1271
Blackburn - - - -	23·47	25·58	1333
Liverpool - - - -	23·55	25·84	1347
Sheffield - - - -	24·93	26·81	1397
Newcastle-upon-Tyne - - -	25·87	27·38	1427
Bolton - - - - -	25·78	28·25	1472
Preston - - - -	27·43	29·79	1552
Manchester - - - -	30·57	34·06	1775

Twenty-eight Large English Towns, 1881–1890.

Towns	Recorded Death-rate	Corrected Death-rate	Zymotic Death rate
28 Towns	21·6	23·0	3·1
London	20·5	21·8	3·0
Brighton	18·5	19·0	2·2
Portsmouth	19·0	19·6	2·7
Norwich	20·0	19·1	2·4
Plymouth	21·4	21·2	2·5
Bristol	19·3	20·0	2·1
Wolverhampton	21·7	22·4	2·6
Birmingham	20·8	22·2	3·0
Leicester	20·6	21·6	3·1
Nottingham	21·5	22·8	3·0
Derby	18·6	19·3	2·1
Birkenhead	19·9	21·3	2·5
Liverpool	26·3	28·9	4·1
Bolton	22·4	24·5	3·4
Manchester	26·6	29·6	3·5
Salford	24·5	26·7	4·3
Oldham	23·9	26·5	2·7
Blackburn	24·8	27·0	3·8
Preston	26·5	28·8	4·9
Huddersfield	20·8	22·8	2·0
Halifax	21·2	23·0	1·6
Bradford	20·4	22·5	2·4
Leeds	22·1	23·6	3·2
Sheffield	22·0	23·7	3·5
Hull	21·0	21·7	3·1
Sunderland	22·7	23·6	3·4
Newcastle-upon-Tyne	22·5	23·8	2·9
Cardiff	20·7	22·5	3·1

Re-calculation of Death-rates in English Towns.

Years	Large English Towns		
	Recorded Death-rate	Corrected Death-rate	Zymotic Death-rate
1876–1880	23·3	24·8	3·8
1881–1885	21·9	23·3	3·3
1886–1890	21·2	22·6	2·9
1881–1890	21·6	23·0	3·1
1881	21·8	23·2	3·4
1882	22·4	23·9	3·6
1883	21·9	23·3	2·9
1884	22·1	23·6	3·6
1885	21·1	22·5	2·8
1886	21·6	23·0	3·0
1887	21·6	23·0	3·3
1888	20·1	21·4	2·5
1889	20·3	21·6	2·9
1890	22·6	24·1	2·9

Re-calculation of Death-rates in Dublin, Belfast, and Cork.

Years	Dublin			Belfast			Cork		
	Recorded Death-rate	Corrected Death-rate	Zymotic Death-rate	Recorded Death-rate	Corrected Death-rate	Zymotic Death-rate	Recorded Death-rate	Corrected Death-rate	Zymotic Death-rate
1876–1881 -	29·5	32·6	5·1	26·0	29·8	?	30·8	33·7	?
1881–1885 -	27·4	30·3	3·1	24·7	28·4	3·5	26·0	28·4	2·9
1886–1890 -	26·2	29·0	2·9	24·4	28·0	3·0	24·3	26·6	1·8
1881–1890 -	26·8	29·6	3·0	24·5	28·1	3·2	25·1	27·4	2·4
1891 - -	25·5	28·2	1·7	25·5	29·3	2·6	26·9	29·4	1·4

It would be desirable to have a census taken every five years; but the great expense this would entail is a barrier difficult to get over. The greater number of the social facts collected for census purposes are not of great value as factors for determining sanitary progression or retrogression. It might be sufficient to have a mere count of the people every third year. There would be little clerical labour in connection with such a census, but the information gained would be of great use to the Public Health Authorities. A triennial enumeration of the population of Liverpool and Belfast would have prevented the extremely incorrect estimates made for so many years in reference to the birth and death-rates in those cities.

I have already stated that the results of past sanitary work encourage us to redouble our exertions to reduce the urban death-rate to at least that of the most healthy of our towns. If the 23 per 1,000 rate of the 28 great towns were reduced to 19, it would mean a saving of 380,000 lives in a single decade.

The recent reduction of the death-rate is most marked in the case of the infective diseases. Of these phthisis, or pulmonary consumption, is the most fatal. It kills about 50,000 people every year in England, and in Dublin it produces a death-rate of nearly 4 per 1,000 of the population, or nearly double the mortality caused by what is termed the principal zymotic diseases. Hitherto very little has been done to prevent this disease from being propagated from the infected to the sound. It is, however, a great advance towards the proper prophylaxis of the malady to know that its immediate exciting cause is a micro-organism. We must not be discouraged because of Koch's failure to kill the bacillus of tuberculosis; in time we shall be able to control its ravages, and perhaps to extirpate it altogether.

At the International Hygienic Congress of 1891, Dr. Burdon Sanderson expressed his belief in the identity of bovine with human tuberculosis, and his conviction that it was sometimes transmitted to man by infected flesh and milk. Professor Macfadyen said that the milk of tubercular cows was a vehicle of the disease of no uncommon occurrence, and he mentioned that he found the microbe of tubercle in the muscles of the ox. By guarding against the use of infected meat and milk, by the constant destruction of the sputa of phthisical patients, and by the adoption of other measures preventive and remedial, it is to be hoped that the ravages of the disease may in time be largely decreased.

A valuable and suggestive memorandum as to the prevention of phthisis has recently been issued by the North Western Branch of the Society of Medical Officers of Health; it deserves a wide circulation.

Whilst phthisis shows tendency to decline, typhoid fever holds its own and even increases in many towns, and, indeed, in the rural districts. I have ascertained that in 50 large towns in the United Kingdom typhoid fever caused annually 2·3 deaths per 10,000 persons, during the years 1886-91. In Dublin the rate was 5, in Belfast 5·1, and in St. Helens 5·2; this last was the highest rate.

Whilst typhus fever, once so prevalent, has now almost ceased to exist, it is evident that the hygienic measures which have eliminated it and smallpox from so many towns—notably Dublin—have had little or no effect upon typhoid fever. It attacks rich and poor alike, and prevails equally in town and country. I have made especial study of the disease as it appears in Dublin, and have come to the conclusion that there, and perhaps elsewhere, it is miasmatic, or earth born. In Dublin during the last ten years, one person in every 144 persons living on clay soils has had typhoid fever, whilst one in every 92 persons located on gravels has contracted the disease. The disengagement of the micro-organisms of this disease takes place when the soils become dry, and this occurs more frequently in the case of loose gravels than of stiff, impertransible clays. To soil pollution I attribute the prevalence of typhoid fever in these countries, and as a preventive against the disease, we must keep the underground air from entering our dwellings. We should be as particular with respect to the purity of the soils under and close to our dwellings, as we are with regard to the purity of the air which surrounds us.

When all the organic *débris* produced in towns is quickly removed from them to a safe distance, when the dangerous subterranean atmosphere is prevented from entering our dwellings, or even our streets, when sewage flows steadily day and night through well-constructed main sewers, and when our soils are thoroughly drained, and kept free from filth, then we may expect to see a substantial reduction in the mortality caused by typhoid fever and indeed by other diseases.

The high mortality of the working classes is in no inconsiderable degree due to the insanitary dwellings in which a large proportion of them reside. It is to the improvement of the homes of the artisans and labourers that we must chiefly look for a further reduction in the death-rate of towns. Two classes of houses are occupied by workmen and their families—one built specially for them, the other originally intended each for one family of the upper or middle class, but now converted into tenements, having from two to a dozen families each. The latter class of dwellings are often very old and dilapidated, their woodwork is honeycombed, their floors sunken and patched, their walls damp owing to defective roofs, their staircases creaking and broken, their basement stories—formerly clean and well-kept kitchens—now noisome dark spaces, sometimes shut up to prevent them from becoming the asylums of homeless wanderers.

The houses built for artisans and labourers, by persons who only desire to make a profit out of them, are often very defective in construction and in the essentials of a healthy dwelling; their rents are generally too high for other than well-paid artisans. The benevolence of such men as Lord Iveagh and the late Mr. Peabody has provided dwellings of moderate rent, but unfortunately only a small fraction of the population can benefit by the generosity of these philanthropists. Many thousands of nice buildings for workpeople have been built by companies founded upon semi-philanthropic, semi-economic lines; but they, too, are generally let at rents exceeding 2s. per week. The houses which are the most insanitary, and in which the seeds of the fevers are nursed as in a hot-bed, are those occupied by the poorest classes—hawkers, the inferior kinds of labourers and porters, itinerant musicians, hangers-on about the markets, persons with no fixed occupation, poor widows, mendicants, the people who loaf about the streets (particularly in the neighbourhood of public-houses), the seedy persons "who have seen better days," &c. The rents

paid, or promised to be paid, by these decayed or always miserably poor people, are very small; and ordinary landlords could not afford to keep their dwellings in the state of repair, cleanliness and convenience which health requires, and indeed public safety demands. It is from these wretched abodes of the semi-pauper classes that the contagia of the infective diseases sally forth, to deal out disease and death amongst the people whose houses are in a fairly good sanitary state. It is not sufficient, therefore, to have our own houses in good order; we are interested, though of course not to the same extent, in having all the houses in our neighbourhood placed under healthful conditions.

For several years past Parliament has been enacting statute after statute in reference to the improvement of the homes of the working classes; and the local authorities have now very large powers entrusted to them for the purpose of building dwellings for artisans and labourers. With respect to towns it seems to me that more has been done for the artisans than for the labourers. I think we should leave chiefly to the operations of the building societies and to private enterprise the providing of dwellings for artisans, as they are fairly well able to take care of themselves; but if the money of the ratepayers is expended in constructing dwellings for the people who can pay only from 1s. to 2s. per week rent, then I say it is well laid out, because it tends to diminish sickness, death and pauperism. I know there are great difficulties, financial and other, in the way of substituting clean and moderately comfortable dwellings for the filthy dens in which dwell at least five per cent. of the urban populations. It is chiefly in such places that the criminal classes reside, and *they* would rather not be supervised by municipal officers. It is probable that a loss would be sustained by letting fairly comfortable and well-kept tenements at rents of from 1s. to 2s. weekly. Corporations can, however, borrow money at so low a rate of interest from the Government for the erection of labourers' dwellings, that if they adopt good schemes, they might provide very low-rent dwellings, without incurring much loss. In 1890 the Corporation of Dublin erected eighty-six dwellings for labourers. They consist of two-storied houses, each containing four tenements. There are nineteen of these let at 2s. per week. Each consists of a living room, $12\frac{2}{3}$ feet by 12 feet; a bedroom, $10\frac{1}{2}$ feet by $7\frac{1}{2}$ feet; and a scullery and other accommodation exclusively belonging to the tenement. The rent derived by the Corporation from these

eighty-six dwellings pays the annual instalment of the loan of money by which they were built, the interest on the loan, and a surplus of nearly £100 a year. The Corporation, who have not spent a penny of their own money on these dwellings, will in thirty-eight years become their owners, as the loan by that time will be repaid.

In contrast to the good value which these Corporation tenants receive for the small rent which they pay, I show in the following statement the poor accommodation afforded to room-keepers in tenements let by house-jobbers. In four streets (Church-street, Upper Mercer-street, North Cumberland street, and Jervis-street, Dublin), I ascertained that 1,074 families resided in 174 houses. They occupied 1,482 rooms, less than one and a half rooms per family. The annual rent paid by the tenants was £8,311 13s., though the valuation of the 174 houses for rateable purposes was only £2,677 10s. The average weekly rent per family was 2s. 6¾d. in Church-street; 2s. 8d. in Mercer-street; 3s. 4¾d. in Cumberland-street, and 3s. 8⅓d. in Jervis-street. These figures show that in Dublin at least the rents of the dwellings of the working classes are far in excess of their real value.

The education of the people in sanitation ought not to be confined to limited sections of society, but should be carried out as one complete and well graduated system for the instruction of the whole Nation. A study of the laws of health should form part of the system of primary education, and would be at least as interesting to the youthful mind as a study of the "three R's." The character and conduct of the man are mainly dependent upon the education and training of the child; so also in the future nation its action and progress will be the product of the education given to the actual nation in its infancy and youth. The sanitary lessons which are now being taught to the British people will bear good fruit in the century which is close at hand—the century, let us hope, of low and uniform death-rates.

We are living in an epoch when man is earnestly striving for a higher and better life—when, perhaps, more than at any previous phase of his history, he subordinates the baser instincts of his nature to its higher and nobler attributes. Yet there are not wanting those who view with indifference or scepticism the efforts which man makes to purify himself, morally and physically. These pessimists, or realists, as they love to call themselves, can see nature only in its darker side. They paint the horrors of the

plagues, the carnage of the battle-field, the devastation of the earthquake and volcano, the destructive action of the tempest, the sufferings of the sick and dying, the long hours of toil, the intolerable evils of poverty, the miserable struggle for existence. They parade all the evils which afflict man—they review all his inherent failings, defects and vices. They grimly and passively await the moment when they must shuffle off their mortal coil, and, like their meaner fellows in creation, commingle in an inevitable dissolution.

Fortunately for human progress, these realists exercise but scant influence on the destiny of man. They seem to forget that the days of health outnumber the hours of sickness; that we rejoice infinitely more than we mourn; that love preponderates over hate; that there is more happiness than misery; that even pain has its uses, as a preserver of life, as an incentive to pity.

Better far is it to look upon the bright side of nature and to appreciate the beauties of this glorious world of ours, with its towering mountains, its billowy seas, its magnificent forests, its vast expanses of emerald green, its innumerable forms of animal and vegetable life, its harmony of colours, its vast dome of sky, with glittering stars and golden orbs of light. Surely ours is a world well worth living in—a world of joy and beauty, which well may inspire us to look from nature up to nature's God; a world of which the poet says—

> "The poetry of earth is never dead
> When all the birds are faint with the hot sun,
> And hide in cooling trees—a voice will run
> From hedge to hedge about the new-mown mead."

Many of the evils which the pessimists believe to be irremediable are in reality within man's power to lessen or destroy. Not a few of them arise from systematic violations of the laws of life and health. We can hardly be clean in our minds if we are foul in our bodies. We should keep corruption as far from us as possible; let us dwell in the freshness of things, and remember always that filth is synonymous with disease and death. Let us worship at the shrine of that goddess who has given a name to the noblest of the sciences—that which relates to the preservation and improvement of that precious porcelain of man's body. Hygeia is depicted as not only beautiful but vigorous, typical of what the human form ought to be. A great American poet says of her:—

"The leaden footsteps of care
Leap to the tune of her pace,
Fairest of all that is fair;
Grace at the heart of all grace!
Sweet'ner of hut and of hall,
Bringer of life out of naught—
Hygeia, oh, fairest of all
The daughters of time and thought."

ART. XII.—*The Light Reflex on the Retinal Vessels.*[a] By J. B. STORY, M.B., F.R.C.S.I.; Surgeon to St. Mark's Ophthalmic Hospital.

EVER since the invention of the ophthalmoscope, ophthalmologists have been familiar with the appearance of a light reflex or light streak on the retinal blood-vessels, but they are not, even at the present time, quite in accord as to the precise cause of this phenomenon. The history of the subject is briefly as follows:—

The very earliest observer, E. von Jaeger, attributed the reflex to a reflection from the walls of the vessels, though he subsequently, and I think erroneously, modified his theory by assuming that it came from the convex surface of the blood column, the vascular walls being, in his opinion, too transparent and too much of the same coefficient of refraction as the retinal tissue to produce the reflex. This theory of a reflection from the convex cylindrical surface of the blood, or of the vessel wall has been opposed by Loring[b] in 1871, who holds that the light streak is caused by refraction of light transmitted from the illuminated background through the convex cylinder of the blood column, which in fact acts as a convex lens, and this view has again been advocated by Davis, in the "Archives of Ophthalmology," of which paper an abstract can be seen in the *Ophthalmic Review*, 1891, p. 88.

Loring supported his theory by the following arguments:—

1. The light streak is too broad to be a reflection from the convexity of the vessel or the blood column.
2. The blood column is too transparent and non-reflecting to give so brilliant a streak.
3. If the blood column reflected the streak, the latter would be best marked when the vessels are full; but in venous pulsation it disappears when the vein is most full. (Loring describes

[a] Read before the Section of Anatomy and Physiology of the Royal Academy of Medicine in Ireland, Friday, March 25, 1892.

[b] Archiv. of Ophthalmology. Vol. II., No. 1, p. 95.

venous pulsation as inducing a temporary stasis, and the crowding of the globules together renders the blood column so opaque that the light does not pass through it to cause the reflex.)

4. The state of the background affects the light streak—*e.g.*, it is absent in detached retina.

He supported his theory by the results of an experiment. A glass tube containing carmine solution placed in the bottom of a small box gives a light reflex when a mirror is placed beneath it, and none when the background is a non-reflecting surface—the illumination in both cases being that of ordinary ophthalmoscopic examination.

Loring's theory has been submitted to an elaborate refutation by Schneller.[a] His view is that the reflex is an image of the ophthalmoscopic light reflected from the convex wall of the blood-vessels.[b] This he establishes by a mathematical analysis of what the size of the reflection should be, the data being given—viz., the size of flame of lamp, the curve of mirror and diameter of blood-vessels, and the various distances.

The facts as observed by him agree with his calculations, as, for instance—

1. The reflex is narrower with short-focus mirrors and in myopic eyes.
2. The reflex moves with the rotation of the mirror.
3. The reflex is almost white—not red, as it should certainly be if Loring's view were correct.
4. The reflex is shortened in longitudinal diameter by backward curves of the vessels.
5. The absence in detachment is merely due to a want of perpendicularity of the vessel to the line of sight.
6. Besides, if Loring were right, the coefficient of refraction of the blood must be very much greater than that of the retina, which we have no reason to believe it to be; and the reflex could not be absent in vessels lying obliquely to the line of sight.

The reflex from the veins differs from that from the arteries, because the vascular walls are thinner, the vessel is more elliptical in shape, and lies deeper, and the walls of the veins are rougher and more wrinkled than those of the arteries.

[a] Von Graefe's Archiv. XVIII., 1, p. 113.
[b] Jaeger's Archiv. No. 1.

Otto Becker[a] treats of the same subject, but comes to no definite conclusion. He states that the vessels of a frog's mesentery have the power, which Loring assumes for the retinal vessels, of refracting transmitted light.

Jaeger[b] defends his own view—

1. The reflex cannot come from a tissue beneath the vessel, for it remains unaltered by the background—*e.g.*, it is the same whether the vessel passes over the lamina cribrosa, the ordinary fundus of a dark or light-haired person, a white exudation, or a dark pigment spot.
2. The vessels cast an intense shadow on the underlying tissues, which can be observed easily under certain conditions.
3. The fact that the light streak is not red is enough to disprove Loring's theory.
4. The convex vascular wall, again, cannot cause the reflex, for it disappears when the vessel is empty, as in embolism.

And if the wall were less transparent than the surrounding tissues it would be visible under normal conditions at the sides of the blood column—

a. If the vessel wall caused the reflex by its coefficient of refraction being different from that of the tissues it would also be visible.

b. And its borders would be marked by dark lines due to total reflection.

c. And they would distort objects beneath.

Now, the light streak can be seen on a vessel right up to the border of the blood column of another vessel crossing above it at right angles. Jaeger allows that a small, colourless, hardly visible line can be seen at the edge of the blood column of the upper vessel, more distinctly when the latter is a vein.

Besides, if the vessel wall refracted the light, the streak could be seen through the wall of the upper vessel when, by movements of the head and mirror, it was invisible on the rest of the lower vessel.

Jaeger illustrates his views by experiments made with carmine solutions in two glass tubes, one crossing over the other at a right angle. When the tubes are immersed in a fluid of the same coefficient of refraction as the glass, the streak of light reflected from the lower tube is visible unaltered through the glass wall of

[a] V. Graefe's Archiv. XVIII., 1, 281.

[b] Ergebnisse der Untersuchung mit der Augenpiegel. 1876. P. 51.

the upper tube, and is only arrested by the column of carmine solution—in fact behaves exactly as Jaeger asserts that the light streak on the retinal vessels does.

Schneller returns to the subject of the light reflex in v. Graefe's "Archiv.," XXVI., p. 71, and upholds his own view against Jaeger's. He asserts that both the arteries and veins of the retina have walls which are visible with the ophthalmoscope at least in the larger vessels. Jaeger himself perceived a white line along the border of the vessels, which he erroneously thought to be a layer of white blood corpuscles. Schneller states that the thickness of the arterial walls compared with the radius of the lumen of the vessel is as 1 is to 3; that of the venous walls is as 1 is to 6 or 8. The inner surface of the vascular walls is smooth, the outer surface of the arterial wall is also smooth, while that of the vein is slightly rougher.

On each side of an artery which crosses over a vein a light yellowish-white line can be perceived of from one-tenth to one-sixth the breadth of the blood column. This cannot be the layer of white blood corpuscles imagined by Jaeger, for the thickness of a white blood corpuscle is too little to be ophthalmoscopically visible, and the white corpuscles do not form a continuous layer along the wall of either veins or arteries. This white line can be nothing else but the optical effect of the wall of the blood-vessel.

The vascular walls, therefore, are not absolutely transparent but translucent, hiding underlying blood vessels like faintly muffed glass. The effect cannot be produced by total reflection, as no dark bordering line is present, such as can be seen in a dislocated lens, &c. The smallness of the vascular wall prevents any prismatic effect, and its translucency prevents it casting a visible shadow on underlying objects.

Schneller rejects Jaeger's argument drawn from the disappearance of the light streak when the vessel is empty, as it may be the absence of the cylindrical convexity of the wall which causes the obliteration of the reflex. Jaeger's second point—that the coefficient of refraction of the vesssel wall is too nearly equal to that of the retinal tissue—has been dealt with above. The effect is caused by slight milkiness of the wall. Jaeger has subsequently advanced the hypothesis that the refractive index of the blood is actually less than that of the retina; but this cannot be the case. The average index of the vitreous is, according to Krause, 1·3485,

and that of the retina must be practically the same. Now Thomas Young (it is interesting to find that a German in 1880 has to go back to Thomas Young in 1801 for an authoritative statement on a point of physiology!) determined the index of blood serum to be 1·354—*i.e.*, actually higher than that of vitreous or retina.

Schneller has attempted to estimate the relative luminosity of the light streaks on the veins and arteries, optic disc, &c.

That on the arteries is brighter than that on the veins. On Jaeger's theory the reverse should be the case (by contrast with the colour of the blood the arterial streak should appear less bright than that on the veins), and the thicker arterial wall should make the arterial reflex less clear and sharp than that on the veins. Besides, the venous reflex should not be so irregular as it is, for the surface of the blood column is perfectly smooth.

All these difficulties are removed if we assume that the reflex comes not from the blood column, but from the vessel walls. The smooth arterial wall reflects a sharper image than the more wrinkled venous wall, and as it is also thicker, the reflex is brighter.

There are, then, only three theories suggested to explain the light streak on the retinal vessels. Which of these may be regarded as the correct one? There can be no reasonable doubt as to which is incorrect—viz., Loring's. The arguments by which it is supported are unsound, and the experiments are inconclusive. All that they prove is that a cylindrical column of carmine solution has the power of refracting light—a statement which no one wishes to controvert; and Davis has merely shown that a blood column has the same power, which was observed by Von Becker years ago; all these being observations made in air. As to the breadth of the light streak being too great to be a reflection from the convexity of the vessel, why the breadth of the streak depends entirely on the size of the source of light, which may be as large as the diameter of the pupil, or even larger. I can corroborate Schneller as to its varying directly with the magnitude of the source of light. Then, as to the transparency of the blood column, we all know it is not transparent, but only faintly translucent. Its shadows are visible, not alone objectively but subjectively in the well-known vascular figure of Purkinje.

As to the curious argument drawn from the absence of the light streak in the veins when distended by venous pulsation, I have not been able to observe the phenomenon, though I have carefully looked for it; and, if it were a fact, its explanation would be easier

by the assumption of a change in the form of the surface of the vessel, making its surface no longer perpendicular to the line of sight.

The absence of the light streak in detachment of the retina is better explained by the slanting course of the vessels than by the change of background, while it is not improbable that the real agent may be something quite different from either theory, and the streak is not always absent. I have frequently observed it in typical cases of retinal detachment.

Loring's experiment is the most unsatisfactory proof of all. With a mirror placed beneath his glass tube, one sees the tube twice over—viz., the real tube and its image in the mirror. If these two objects are made to coincide the tube seen appears nearly double as bright as it would otherwise appear, but nothing at all resembling the light streak on the retinal vessels can be made out on it which cannot be seen on glass tubes over a dark background. A light streak can be made out easily enough on a glass tube with a less luminous background. In any case Loring's experiment should not be made in air, but in some medium with an index of refraction pretty nearly equal to that of the glass tube and its contained fluid. If this be done (as in the tubes exhibited sunk in glycerine jelly) anyone can convince himself that the only reflex at all resembling that on the retinal vessels is that on the anterior surface of the tube.

Again, Schneller's observation that the light reflex moves with the rotation of the mirror is perfectly correct, and disproves Loring's theory completely, as does also the even more incontrovertible fact that the light streak is not red, but white. The absolutely unchanged character of the reflex, no matter what be the background—white, as in optic disc; black, as over pigment spots; or red, as over subjacent blood vessels—is also in my own experience an easily observed fact, and one vouched for by the acutest of all ophthalmoscopic observers—the late Ed. V. Jaeger, and it is completely destructive to Loring's theory.

When we come to a choice between Jaeger's second theory and his first—which is the one advocated by Schneller—the decision is not quite so easy; but I have myself no hesitation in electing to stand by the latter—viz., that the light streak is a reflex from the wall of the vessel.

Jaeger's experiment with the glass tubes is perfectly correct, so far it goes, but does not disprove the theory that the light streak comes

from the vascular wall, if we assume with Schneller that the wall does not differ appreciably in refraction from the retina, but is slightly opaque, and by its slight opacity causes the reflex. Or even if the reflex was caused by the refraction of the wall being high, still Jaeger's experimental argument could not be pertinent unless the whole thickness of the wall exhibited the high refraction. If it were only an extremely thin layer of the wall no visible effect would be produced on the light streak reflected from subjacent vessels.

But I can corroborate Schneller's observation that the walls of the larger retinal vessels are distinctly visible in ophthalmoscopic examination. In fact, since I have looked for them I have never failed to see them, and when in pathological conditions the vascular walls are thickened and opaque (in perivasculitis), the vascular light reflex is quite as marked a phenomenon as it is when the vessel walls are difficult to detect, as in young and healthy eyes.

A very striking and convincing observation can sometimes be made in young eyes which have that so-called shot-silk appearance in their retinæ. The vascular light reflex can, in these eyes be seen as an intensification of the retinal reflex. As the light flashes over the retina it illuminates the arterial wall just in the same way as it does the shot-silk surface. The two reflexes are apparently caused by similar surfaces—that on the arteries being generally on a plane somewhat deeper than that reflected from the internal limiting membrane—if it be the internal limiting membrane which causes the shot-silk appearance.

I may add that in these eyes with that rare affection detachment of the choriodea I have seen the reflex.

ART. XIII.—*On a "Pythogenic" Form of Glossitis.* By W. LANGFORD SYMES, L.R.C.P.I., &c., Kiltegan.

CASES of glossitis are of such unusual occurrence that they may be classed amongst those rare diseases which form, as it were, landmarks in one's experience, and interesting pages in one's note-books. Apart, however, from this rarity, the chief peculiarity of the following examples chiefly lies in their strange mode of origin—one which, if not unknown, has at least passed hitherto unnoticed in most surgical text-books. The notes are briefly as follow:—

CASE I.—B. E., aged fifty, a strong robust labourer of low and plethoric build, was for some days employed at work in old drains and

ditches in wet and marshy land, which, saturated with stagnant water, had lain choked for years. A very fœtid smell rose from the work as he went along—so much so that he felt sick frequently. Within a few days he complained of malaise and slight lump in the throat, was seized with rigors, accompanied by dribbling of saliva and pain in swallowing. These symptoms increased until his tongue became acutely swollen and protruded from his mouth. There was very little glandular enlargement under the jaw. He spoke with a peculiar pharyngeal or gurgling voice, and was in imminent dread of suffocation.

When seen his mouth was open and the tongue protruding—it was acutely tender, notched by the teeth, and seemed thicker and harder the further back one examined it, being rather worse on the right side. He swallowed with intense pain and difficulty. Two free longitudinal incisions were made from as far back as possible to its tip, one on each side of the median raphé. From these he bled most profusely, one of which eventually required plugging before it ceased. He was much relieved by this procedure, but it was necessary to repeat the incisions the following day as the tongue quickly swelled again. With gargles of borax and sodü bicarb., fomentations, poultices, and the internal administration of quinine the inflammation gradually subsided, and the tongue regained its function completely.

Case II.—T. D., aged thirty, a perfectly healthy man, was for some weeks in June and July working in old dykes and ditches, which were very foul and offensive, not having been disturbed for a great length of time. He developed malaise, pains in his bones, and headaches, which, with a sensation of lump in the throat, lasted for nearly three weeks. This "lump" increased, the right side of his mouth and face became painful, and his tongue began to swell. Thinking the mischief was due to a carious tooth, he had this extracted without relief. When seen on August 4th his temperature was 99°, pulse 76, skin moist and hot; he could not put out his tongue although he could open his mouth freely. There was no swelling or infiltration under the jaw. His voice was very peculiar, of a gurgling and pharyngeal character, and his breathing was difficult. Swallowing was almost impossible from his dread of the resulting pain, and he had a feeling of choking which alarmed him much. On examining his throat it was curious not to find tonsillitis, as his symptoms very closely resembled it in a severe form. The right side of the tongue was seen to be swollen considerably; it was very tender, particularly far back near the base, and below the line of sight, where in a globular shape it impinged on the tonsil, being here very thick, hard, and tense, while it faded away like a wedge towards the apex. Its appearance was characteristic—covered with a greyish, slimy fur, œdematous, and indented by the teeth, it lay paralysed in the floor of the mouth, its outer

edge tilted up, exposing the red and tumefied under surface to a greater extent than the dorsum. The swelling was very abruptly limited to the right side by the septum, which feels under these conditions like a very tightly stretched cord. He had profuse salivation from his inability to swallow, and great pain in the ear. He was ordered warm lotions of biborate of sodium with carbolic acid, an aperient, and a mixture of aconite and tartar emetic. The following morning, being much in the same state, a long and free incision was made into the tongue along the junction of the dorsum and side. The wound freely spouted very offensive blood, but no true pus. After about six ounces had escaped he was much relieved, and protruded it with more ease. That evening, however, the swelling returned, and a second freer and much deeper incision was made through the dorsum, and one of the ranine veins opened underneath. From these incisions, although he bled less freely, he obtained more relief than before. He was now given quinine internally, with dilute nitric acid, and gradually regained his strength and the use of his tongue.

The occurrence of these two cases under precisely similar conditions is interesting, the more so as they may help to expunge from the literature of a very rare disease—or at least lessen in significance—that mischievous word "idiopathic." That causes other than those here described may be at work in many cases of so-called "idiopathic" glossitis is very probable, for all writers speak of instances for which no cause can be assigned. However, from the foregoing examples it is evident that amongst these an important factor in producing the disease is "pythogenesis," or direct poisoning from some product of vegetable decomposition through the medium of the system. In these cases there seems as it were a prolonged period of incubation before the tongue is acutely affected, characterised by malaise, dull headaches, pains in the bones, followed after several days by a feeling of lump in the throat when swallowing, referred to the anterior part of the neck, after which rigors and salivation usher in the acute symptoms. The system is profoundly affected. There is a livid, congested, unhealthy, or poisoned appearance, very offensive breath, with great prostration and weakness. Recovery is very tedious after all acute local symptoms have disappeared, and a distinctly unilateral case may be quite as urgent and protracted as a bilateral one. The amount of lingual tissue engaged bears no proportion to the constitutional disturbance.

In these days of advanced bacteriology, with its chemical pathology, there is a tendency to trace many diseases, even the most

obscure nervous affections, to the action on the system of the various parasitic forms of plant life, and numerous varieties of the Schizomycetes are now considered to be distinctly pathogenic, whilst some have been definitely proved to be the essential cause of many of the specific infective diseases. Without, however, attempting to enter the subject to more than a clinical depth, it is interesting to notice that the conditions above cited as causing this form of glossitis are precisely those which have been proved to favour the development of the specific micro-organism of diphtheria,[a] with its tripoisonous products of enzyme, toxalbumose, and organic acid. In many cases of so-called "idiopathic" glossitis where no definite cause could be discovered, one author (Dr. W. Kerr, 1833) believed that there was an idiosyncrasy or peculiar predisposing influence in the system which distinctly favoured its onset and development—a view which is in no way improbable. Once developed its subsequent progress is probably similar to the other forms of the disease from injuries, stings of insects (wasps), mercurial or iodine poisoning, secondary inflammations, or the "glossitis variolosa"[b] of small-pox; one instance only having been seen in typhus by Murchison.

Of the symptoms of glossitis none is more interesting than the pain in the ear, due, no doubt, like that in quinsy, to the tympanic branch of the glosso-pharyngeal nerve, by which latter the posterior third of the tongue is supplied. The voice is peculiar and pharyngeal, being produced more by the bulging of the tongue into the pharynx than inability to articulate, for the tip is free to pronounce words, while the base may touch the posterior wall of the pharynx from the infiltration of its muscular substance. Similarly, swallowing is intensely more painful than talking, showing the greater implication of the base.

Though seemingly an absurdity, it is nevertheless quite possible that a surgeon might examine a patient with glossitis, and that in its most dangerous form, and not detect anything the matter with the tongue. The peculiar voice, inability to swallow, the pain in the ear, and the feeling of "lump in the neck," leading one to pass over glossitis, and, looking beyond the tongue at a slightly reddened throat, conclude that the tonsil was at fault. This liability is rendered more likely by the facts that in severe tonsil-

[a] Professor Sims Woodhead. "Address in Bacteriology," Nottingham, 1892. Dr. Thorne Thorne. "Milroy Lectures," 1892. Dr. Sidney Martin. "Goulstonian Lectures," 1892.

[b] Dr. J. W. Moore. "Eruptive and Continued Fevers," 1892.

litis, in addition to these symptoms, we frequently cannot see the tonsil, while from glossitis being amongst the rarest of diseases, its most serious forms being very far back almost beyond the reach of the finger, or below the line of sight, one is apt to pass over the true seat of the mischief.

Most cases of glossitis end favourably, though in different manners. It is a very peculiar inflammation; and in contradistinction to the above form, which is gradual in its onset and protracted in its decline, a case of unusual severity with protrusion and paralysis has been seen by Frank, of Vienna, to come and go completely in three days. The same authority tells us of the formation of a false membrane in the substance of the organ when intensely inflamed, while suppuration has frequently resulted, and even gangrene is described in an extremely debilitated constitution.

Of remedial measures, in addition to leeching, calomel, and antiphlogistics, antiseptic lotions, and, in *miasmatic* or *pythogenic* cases, quinine, the question of treatment will mainly turn on that of incisions. Some authors deem them unnecessary, as never having seen them required, but in severe cases, where the tongue encroaches on, and almost occludes, the pharynx, no other remedy will perhaps so surely relieve the local infiltration and the patient's anxieties. They must be very deep, for the tongue, although it may bleed freely, may quickly swell again as if nothing had been done. In each of the above instances it had to be twice performed.

The general infiltration, tumefaction, and heat of the organ, with its thick coating of fur, so obscures the local pulse of the lingual artery that the precautions so clearly laid down for its avoidance are of questionable value. The relations of parts are much altered by the inflammatory effusion. The mucous sides of the tongue and lingualis muscle, being less resisting than the thickened and coated dorsum, yield to the distension so much that the tongue seems tilted up, exposing a red swelling along by the teeth. Incisions—here healing up too quickly to give much permanent relief to the tension—will be found to be most beneficial very far back through the point of most tumefaction and greatest tenderness, or in the median raphé on the underneath surface.

In the after-treatment of this form of glossitis, *quinine* with the mineral acids will be found most serviceable, while antiseptic lotions are indispensable to the proper cleansing and sanitation of the mouth.

ART. XIV.—*Human and Fowl Tuberculosis.*[a] By ALFRED R. PARSONS, M.B. Univ. Dubl.; Assistant Physician to Sir P. Dun's Hospital.

AN investigation into the causation of any given disease may be undertaken from three different standpoints. The clinical history and bedside phenomena of several similar cases, grouped and compared, may form the basis of a theory as to the probable nature of the affection, or the anatomical lesions and their distribution may present indications of ætiological significance; or, finally, experimental pathology may indisputably point to the infective nature of the process, and thereby render sure the first step towards its complete elucidation. Centuries of clinical observation threw but little light on the causation of tuberculosis. If certain cases appeared inexplicable on any but an infective theory, others presented themselves in which no such assumption seemed admissible. Pathological anatomy, in the hands of Buhl, Ponfick, and Weigert, explained the occurrence of miliary tuberculosis by a systemic infection from an old caseous focus, but could give no information regarding the causation of the latter. Experimental pathology, nearly sixty years ago, first demonstrated successfully the infective nature of the tubercular process when Klincke in 1843 produced extensive disease of the lungs and livers of rabbits by inoculating them with portions of organs containing numerous tubercles. These researches, soon forgotten, were confirmed and extended some twenty years later by Villemin, who produced artificial tuberculosis, and proved experimentally the identity of the human and bovine forms. His results excited considerable attention, and the opponents of the infective theory claimed to produce tubercles by the inoculation of non-tubercular matter. To Cohnheim and Salomonsen is due the credit of demonstrating, by a method beyond suspicion, the infective nature of tuberculosis. In a happy moment they thought of selecting the anterior chamber of the rabbit's eye for their experiments, and proved conclusively that the minute tubercles in the iris, characterised by their late development, further course and caseation, were produced only after the injection of tubercular matter.

So much was known of the causation of tuberculosis when Koch commenced his classical researches. These culminated in a paper

[a] Read before the Section of Pathology in the Royal Academy of Medicine in Ireland, on Friday, April 1, 1892.

read by him on the 24th March, 1882—just ten years ago—before the Physiological Society of Berlin, in which he claimed to have discovered the cause of tuberculosis in the form of a well-defined bacillus. A decade of this critical and sceptical age has since passed away, Koch's claims have been investigated by friends and foes, and to-day every line of that original treatise, save a few statements of comparatively slight importance, remains intact. One of these statements—the error of which Koch himself has recently pointed out—dealt with the relation of avian to mammalian tuberculosis, and as a further series of investigations on this subject have been lately made by two members of the French school, I thought it would not be amiss to lay a summary of the more recent literature of this question before the Academy.

Of the many difficulties against which Koch had to contend in his earlier experiments, none probably exceeded that of obtaining a pure culture of the tubercle bacilli. After many failures he at length succeeded in growing them on blood-serum. In 1885 Nocard pointed out that the addition of small quantities of sugar and peptone to the serum favoured their development, and a little later Nocard and Roux showed that if glycerine be added to other ofthe nutritive media, the tubercle bacilli appeared to grow more easily, to change their pathological properties, and to increase their virulence. Yersin obtained some of these cultures on glycerine-agar, and found that by inoculating them into the veins of a rabbit it was possible to produce a form of tuberculosis characterised by the absence of tubercles. The inference drawn from such observations, and one which gained currency in France, was that by cultivating the tubercle bacilli on glycerine-agar, it was possible so to alter their properties as practically to produce a new variety of that organism. This inference was apparently supported by an observation of Metschnikoff, who pointed out that tubercle bacilli, developed on agar-glycerine, grew luxuriantly at 43·6° C.; whereas Koch had stated that growth ceased if the temperature exceeded 41° C.

To a member of the Italian school belongs the honour of first suggesting what eventually proved to be the correct explanation of these discordant results. Rivolta, in 1889, expressed the suspicion that the bacilli found in avian and in mammalian tuberculosis belonged to two distinct species. Experiments conducted by Maffuci and others, confirmed this suspicion, and Koch, in his paper on "Bacteriological Investigation," read before the

Tenth International Medical Congress in 1890 at Berlin, cleared up still further the disputed matter. He stated that when making his original investigations, the tubercle bacilli from the most different sources not only presented the same microscopical appearance, and reacted to the same stains, but gave cultures indistinguishable from each other. From fowl suffering with tuberculosis, owing to his inability at that time to obtain fresh material, he was unable to produce any cultures; but, finding that the bacilli in their appearance and in their reaction towards the aniline dyes agreed fully with those of which he had made cultures, he felt justified in looking upon them as identical. Some time later he received from experimenters, whose veracity and ability were above suspicion, cultures stated to be pure cultures of tubercle bacilli, which differed considerably from that he himself had made, and producing on inoculation results distinct from those he had described. The first explanation which presented itself to Koch's mind was that these bacilli had been developed under unfavourable conditions, and consequently he commenced a series of experiments in which he watched the growth of his own bacillus at unusually high temperatures, and strove by adding chemical substances to his cultures, by varying the amount of moisture, by developing the bacilli along with other micro-organisms, by inoculating them on a number of slightly sensitive animals to produce growths identical with these puzzling forms. In these endeavours he completely failed, and the problem was not solved till he accidentally obtained some living fowl affected with tuberculosis. From these he made some cultures, and to his amazement found them to correspond exactly with those enigmatical varieties which had been sent to him, and consequently he now holds that avian tubercle bacilli, though closely related to human tubercle bacilli, constitute a distinct variety.

A very exhaustive and highly interesting series of experiments have been recently made on this subject by MM. Straus and Gamaleïa. By cultures and inoculations they have indisputably demonstrated the difference between the bacilli causing avian and those causing mammalian tuberculosis. Proceeding exactly by the method indicated by Koch, they injected some phthisical sputum into a guinea pig, and a fortnight later inoculated a series of tubes containing blood serum with portions of its enlarged glands. The tubes were kept at a temperature of 37·5° C., and after a lapse of two or three weeks minute, dry, scaly grains of a

dull whitish colour, of firm consistence and possessing considerable cohesion made their appearance. Tubes of serum inoculated with portions of the organs of tubercular fowl presented, on the contrary, round, whitish, moist spots, softer in consistence, and with much less cohesion than those of human source. If these growths were transferred to tubes of glycerine-agar the difference was quite as marked. Gradually in each case the agar was covered over with a continuous whitish coating, which was surmounted in human tuberculosis with numerous warty elevations, but in fowl tuberculosis was provided with wrinkles and furrows. I think these coloured plates which illustrate Straus and Gamaleïa's paper make these distinctions quite evident, and I am happy, through the kindness of Professor Straus, to be in a position to submit to the Pathological Section of the Royal Academy of Medicine some of his pure cultures of human and of fowl tubercle bacilli on this the first occasion on which pure cultures of these micro-organisms have been exhibited to the Academy. Straus and Gamaleïa ascertained that the avian bacilli developed luxuriantly at 43° C., while the human bacilli ceased to grow if the temperature exceeded 41° C. They further obtained cultures of tubercle bacilli from a large number of the French laboratories, and found them invariably to correspond with those of fowl tuberculosis. Consequently nearly all the literature of the French school on the bacteriological aspect of tuberculosis has been based on experiments made with fowl bacilli, and may or may not be true of mammalian tuberculosis.

The characteristic lesions produced by the inoculation of these cultures on animals were even more striking than the differences in the cultures themselves. They submitted some 82 guinea pigs to experimental investigation. Of these 56 were inoculated with human tubercle bacilli, and 26 with fowl bacilli. Whether the method adopted was subcutaneous, intra-peritoneal, intra-pulmonic, or intra-venous, they found invariably that the animals inoculated with human bacilli presented at death a generalised eruption of macroscopically visible tubercles, hypertrophied caseous glands, and an enlarged yellow spleen; but if the bacilli were of an avian source there was no eruption of macroscopically visible tubercles; the bacilli were occasionally found in the organs, but the most constant lesion was a swollen red spleen. They experimented similarly on rabbits, and found that the usual pathological appearance in those animals injected with human bacilli was an

eruption of tubercles, particularly abundant in the lungs, while the animals treated with fowl bacilli likewise succumbed, but presented no tubercles visible to the naked eye.

At one time an idea was prevalent that it was exceedingly difficult to produce artificial tuberculosis in dogs, in fact, more than one experimenter wrote that he knew no means by which an adult dog could be infected with tuberculosis, and consequently it was attempted by the injection of dogs' serum to render a rabbit immune to tubercular infection. Straus and Gamaleïa experimented on 15 dogs. They found, as Maffuci and Koch had previously shown, that an injection of a small quantity, say $\frac{1}{4}$ c. c. of an emulsion of human tubercle bacilli made into a dog killed him in one or two months, and at the *post-mortem* examination the lungs were found studded with miliary tubercles. On the other hand, comparatively large quantities of an emulsion of avian bacilli could be injected without producing any appreciable effect. True, if one used 20–30 c. cs. of a thick emulsion the dog wasted and died at the end of a month or six weeks, but no tubercles were visible at the autopsy, and death appeared to be due to a special intoxication.

Dogs are, therefore, excellent media for determining whether we are dealing with a culture of human or of fowl tubercle bacilli. In this, however, they are left far behind by fowl themselves. The difficulty, indeed, of infecting fowl with phthisical sputum has been often pointed out. Suffice it to recall the experiments of Straus and Wurtz, who fed eight hens for periods varying from six months to one year on expectoration containing numerous bacilli, and at the end of that time, though some of the fowl had consumed upwards of 45 kilogrammes of sputum, when they were killed they presented no tubercular lesion. Straus and Gamaleïa's researches were made on twenty pigeon and fowl. They injected considerable quantities of pure cultures of human tubercle bacilli under the skin, into the pectoral muscle, into the axillary vein, into the peritoneal cavity of these animals without producing any appreciable result; but an injection of a small quantity of avian tubercle bacilli produced rapid wasting and death at the end of a few weeks or months. At the *post-mortem* examination abundant bacilli were found in the organs, and sometimes an eruption of generalised tubercles. In fowl, therefore, we have animals absolutely and completely refractory to human tubercle bacilli, but succumbing easily to their own variety.

Out of these researches arises a very important question: "Are men susceptible to fowl tubercle bacilli?" To that question no direct answer can be given at present. So far as I am aware, in no case has a culture presenting features identical with those of fowl tuberculosis been obtained from a human subject, but as the distinction between the two varieties is of comparatively recent date, a sufficient number of experiments have probably not yet been made to justify a reply in the negative.

Of the prevalence and destructive tendency of human tuberculosis our hospitals and the returns of the Registrar-General afford convincing proof. Similarly, among the affections from which fowl suffer there is none more dangerous than tuberculosis. Should this disease appear in a farm-yard, the only effective method of stamping it out is to kill off all the members of that variety which has been attacked. Occasionally no less severe measures than the destruction of all the birds will rid the farmyard of this scourge. Farmers have, indeed, learned by experience the infective nature of avian tuberculosis, and recognised that they must resort to radical means to prevent a local outbreak becoming general, but the public are practically oblivious to the great risk of infection to which they expose themselves, while the phthisical portion of the community scatters broadcast sputa containing organisms remarkable for their resisting power to agencies generally destructive to the lower forms of life.

Men are most commonly infected by the inhalation of the dried expectoration of their fellow creatures; but from the distribution of the anatomical lesions in fowl it seems probable that infection occurs through the intestinal rather than the respiratory tract. An examination of the mucous surface of the former in a fowl which has succumbed to an attack of tuberculosis discloses numerous ulcers with infiltrated edges, while nodules of varying size are often found in or attached to the intestinal wall. These sometimes undergo caseous degeneration, discharge their contents into the tube, and produce a pouch or diverticulum communicating freely with lumen of gut. Thus a large quantity of cheesy material containing numerous tubercle bacilli is discharged per annum, and many foci of infection established. The appearance of the liver is even more characteristic. Scattered with some degree of uniformity over its surface are multiple whitish yellow patches. These differ considerably in size—some appear no larger than a pin's head, others have an area equal to that of a sixpence.

They extend also for varying depths into the substance of the liver, and seem to be as numerous in the deep as in the superficial parts. Notwithstanding the number and size of these new growths jaundice is an exceedingly rare complication. Out of several hundred birds examined by Mr. Bland Sutton[a] in only one was there any general deposition of bile pigment in the tissues. Microscopical examination shows that these masses consist generally of a central caseous area surrounded by giant cells, with many nuclei, in each of which the nucleolus is visible. Beyond these lies a zone of granulation tissue, which in the larger nodules has gone on to the formation of fibrous tissue, separating them sharply from the surrounding liver substance. The latter is occasionally infiltrated with small round cells, and is sometimes in a condition of amyloid degeneration. The bacilli may be found in the central caseous area, but are present more commonly and abundantly in the giant cells and granulation tissue. With the exception of the spleen, which contains nodules similar in appearance to those found in the liver, the remaining abdominal viscera are, as a rule, free from disease. In a few cases out of a large number examined by Mr. Sibley[b] there was a slight deposit at the hilum of the kidney or ovary. Though considerably over 1,000 birds have been examined by the above-mentioned observers, in only two cases did they find any deposit in the lungs visible to the naked eye. The lymphatic glands in the neck are by no means infrequently engaged; they undergo caseous degeneration, but do not suppurate or discharge externally. Mr. Sibley met with two cases presenting caries of the vertebral column, and one with hip-joint disease and an abscess cavity in the upper part of the thigh bone.

In the preparation of fowl for the market it sometimes happens that the internal organs are found to be in the above condition. This does not, however, so far as I have ascertained from those engaged in the work of preparation, in their opinion injuriously affect the bird, or render it in any way unfit for food, provided the disease be confined to the viscera. The safety of this practice may possibly be questioned, while it must be admitted that deposits in the joints are rare, and no observer seems to have detected them in the muscles.

In conclusion, let me say that the earlier part of the bacteriological summary is derived chiefly from one of Koch's original

[a] Trans. Lond. Path. Society. Vol. XXXV. P. 477.
[b] Trans. Lond. Path. Soc. Vol. XXXIX. P. 464.

reports on tuberculosis (*Mittheilungen aus dem Gesundheitsamte.* Vol. II. 1884. Translated by Boyd in selected essays), while to Straus and Gamaleïa's highly instructive article in the *Archives de Médecine Experimentale* I am indebted for the greater portion of it.

DIFFUSION OF VIRUS OF RABIES.

Dr. Giovanni Bombicci publishes, in the second fasciculus for this year of original memoirs of *Lo Sperimentale* (Florence, 30 April), a report of a series of experiments carried on in the pathological laboratory of the University of Bologna, to determine the time required for the diffusion of the virus of rabies from the point of insertion. From the practical point of view the determination is important, as helping us to know within what period local measures of treatment are likely to be efficacious, and remedial inoculations give best promise of success. Dr. Bombicci concludes from his experiments—that diffusion of the virus from the point of inoculation to the nervous centres is very rapid; that when inoculation is performed in the eye the virus passes from the anterior chamber to parts outside the eyeball in 24–30 hours; that the time is independent of the strength of the virus injected; and that when immediate death is obviated by the removal of the part inoculated, the fatal effect may be retarded for a variable number of days. He infers that after infection with this virus there is a period within which local treatment may be efficacious, and antirabic inoculations will have a better chance of success. This period, however, at any rate in the rabbit, is extremely short.

"THE CORPUSCLE."

This monthly professes to be the representative literary organ of the students of Rush Medical College, Chicago. It claims to be the first medical students' journal that the world has seen. It has "come to stay" (it says), not being of "mushroom growth." It is adorned with portraits of its eight editors. The contents are very much what might be expected—a mixture of grave and gay. We infer from one of the leading articles that politeness to lady students is not enforced by the public opinion of the school. "A lady cannot come to a lecture without being made either a target for direct or indirect insult. A whisper, a word, a grin, or that most cowardly of all, a note is directed at her"—unless she is accompanied by a "stalwart protector." From a paper recommending the military medical service of the United States, we learn that an Assistant Surgeon, on appointment, draws £320 a year, with free quarters; after five years' service, £400. On promotion to rank of Surgeon (after examination), the pay is £500; with an annual increase of 10 per cent. up to 40 per cent.

PART II.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

The Structure and Functions of the Brain and Spinal Cord, being the Fullerian Lectures for 1891. By Victor Horsley, B.S., F.R.C.S., F.R.S. London: Griffin & Co. 1892, Pp. 223.

These lectures form the first instalment of a work on the central nervous system. The present volume deals only with the spinal cord and ganglia. In subsequent courses of lectures the author intends to describe the structure and functions of the cerebrum and cerebellum, and to discuss the recent advances which have been made in the science of physiological psychology.

After a short, but very interesting and appreciative historical sketch of the growth of our knowledge of nervous physiology, the author examines the nervous systems of some invertebrate animals. In protozoa, although no nervous system has been demonstrated anatomically, yet the responsive movements on stimulation, the apparent choice in these movements, and the rhythmic pulse observed in the contractile vesicle, are all phenomena, which in higher animals are supposed to point to nerve action. In hydrozoa the simple nervo-muscular apparatus described by Kleinenberg is well known. But it would appear that there is a greater differentiation of parts than was at first supposed, since "there is reason to believe that in the hydra there is not only distinct muscular tissue, but that there are also cells of the ectoderm which have more specially to do with the reception of impressions, and other cells which mechanically support the former." "In any case, we see here the beginning of a system which runs right up through the animal scale to man—viz., the provision of a sense organ—*i.e.*, nerve-cell in its elementary state in the periphery or external part of the body, which receives external impressions and communicates them to the interior, with the result that a movement follows."

Passing to the medusæ, it is shown that the source or initiation of the rhythmic movements of the bell are to be sought in the marginal sense-organs; that on removal of these the bell is paralysed, and also manifests a loss of tone; that the paralysed

bell will manifest rhythmic contractions when artificially stimulated, and that these contractions alter in character when the stimulation is prolonged. Besides these phenomena, medusæ respond by different and appropriate movements to localised stimulation. In all these respects it manifests properties referable to a nervous system. As to the vexed question of the source of the rhythmic movements, whether in the ganglionic cells, nerve-endings or muscular tissue, the author thinks the weight of evidence shows that the movements in question are due to the possession of a nervous system.

An account is given of the important observations of Romanes and Ewart on the movement of echinoderms, and it is pointed out that in these animals we have in the central nervous ring the first construction of a centre for co-ordinating nerve impulses and producing co-operation.

In arthropoda we find a bilaterally symmetrical nervous system connected by commissures. The two first ganglia are the most important and correspond somewhat to the brain in vertebrates. "These two first ganglia exhibit in a remarkable way the great principle of nerve functions of which we have as yet seen but little—namely, the precise localisation of action in definite parts of the nervous system, or, as one naturally prefers to say, in special nerve-centres. We are also justified from these experiments in concluding that in these animals the nervous system in each of its conjoined halves subserves practically the functions of only that side of the body in which it happens to lie. We have, therefore, not only localisation of function, but also proof that in the systems in which that is first well marked, there is concurrently exhibited a unilateral character of the representation of movement in the nerve cells."

In commencing the description of the nervous system in vertebrates (amphibia, birds and mammals) the following important caution is given:—"In all cases where we are dealing with the functions of similar organs in different orders of animals we can avoid error if we classify the points to be elucidated into a first division of general principles, and follow that by succeeding divisions, gradually introducing more and more details. What is true of one order, as regards the first of such divisions, is undoubtedly true of another; but when mistakes have been made they have followed the indiscriminate application of facts from one animal to explain events occurring in another, without reference to the division of principles such as that I have indicated."

A short anatomical description follows of the anatomy of nerve fibres, and of their principal terminal organs. Then the nervous system of the frog is described, and the crossed action of the brain on lower parts, as in the decussation of the optic nerve, and of the motor conductors to the muscles of the limbs. The great development of commissural connections between the different sides of the nerve-centres is dwelt on, and it is shown that although unilaterality of representation prevails, there is a possibility of a certain degree of bilaterality becoming developed.

A good account is given of the structure, and of the little we know of the functions of the spinal and sympathetic ganglia, and the changes which occur in a nerve during its activity are detailed in accordance with the latest investigations. In the discussion of the general principles which underlie the action of simple nerve-centres—such as those of the spinal cord—it is pointed out that, with the exception of the connection between the fibres of the anterior roots with the ganglionic cells of the anterior horns, we do not know the attachments of the nerve-cells either with one another or with the nerve-fibres. Consequently, of that structure, the "field of conjunction," which lies between the afferent and the efferent side of the centre, we know nothing except that it is a place of high resistance, or the seat of a block to nervous impulses.

The character of the discharge from nerve-centres as contrasted with that due to the direct stimulation of a nerve, is dwelt on. Its gradual character, its successive or rhythmical character and low intensity are pointed out. The inferences as to the intensity are derived from the researches of the author and Prof. Gotch, and are one of the most interesting results of this most important investigation. This low intensity, as shown by the electrical method, is important—"because we see that it may be possible in the future to find out some relation between the discharge from nerve-centres and the amount of muscular force which is evoked, and in this way, by some considerations allied to those upon which the conservation of energy is based, aim indirectly at a rough physical conception of nerve-energy itself."

Another very unexpected and interesting result of this investigation is an experimental confirmation of the old view of Dr. Bastian, that the origin of nerve-energy is to be looked for not on the efferent or so-called motor side, but on the afferent or sensory side of the nerve-centres. Professors Horsley and Gotch

found that the excitation of the spinal nerve-centres was conveyed up the cord as a stream of nerve-impulses in the posterior half of the organ and not in the ventral side. "To our surprise, and, I must add, strongly against our preconceived notions, we discovered that the nerve-energy of a discharging nerve-centre overflowed down the posterior or afferent roots, as well as of course going down the ordinary efferent paths. This shed at once a new light on the whole subject as to the source of energy in the nerve-centres, because knowing as we did from our other experiments that impulses would pass up most easily the posterior side of the spinal cord, and would only issue through the nerve-centres in a very diminished degree, it was clear that the field of conjunction must afford a considerable block, and that therefore if there was an overflow down the posterior roots, that overflow could only be reasonably surmised to come from a source of energy situated in the afferent side of the centre. It occurred to us to test this by a new way altogether, and that was to see whether nerve-impulses would pass backwards through a nerve-centre. This we effected very easily by simply applying our electrodes to the efferent or so-called motor channel—namely, the anterior root—and connecting the upper part of the spinal cord with the galvanometer so as to reveal the slightest amount of nerve-impulses that might pass up the cord. We then discovered that nothing whatever passed up the spinal cord when we thus excited the anterior root. The block, therefore, that we spoke of just now as existing in the field of conjunction, must be of a very extreme character for anything in the way of an impulse trying to pass backwards from the large nerve-cells of the anterior horn. In this way you see we are brought logically back again to our original position—viz., that it is the afferent side of the nerve-centre which is the source of nerve-energy."

In the last two lectures different centres in the cord and medulla oblongata are considered. Our space will not allow us to follow the author through this consideration further than to give another result of the important work with which he and Professor Gotch have enriched physiology. The paths of afferent conduction in the cord are very obscure, and the results of direct experiments have been discrepant and doubtful. By the electrical method it has been found "that 80 per cent. of the afferent impulses travel up the same side of the cord, the 80 per cent. being made up of 60 per cent. of the total going up the posterior column, and 20

per cent. going up the lateral column; while of the remaining balance more than 15 per cent. passed up the posterior column of the opposite side, and a trace up the lateral column of that side."

In conclusion, we cannot speak too highly of these lectures. Although modestly called by the author merely an elementary review of the subject, they abound in originality of thought and suggestive matter, while the admirable arrangement of the subject, and the clearness and terseness of the style, cannot fail to charm the reader whether he be a physiologist or not.

On Common Neuroses, or the Neurotic Element in Disease and its Rational Treatment. Three Lectures delivered before the Harveian Society of London, November–December, 1891. By JAMES FREDERIC GOODHART, M.D. London: H. K. Lewis. 1892. Pp. 128.

THE author of these most readable lectures is impressed with the widely-prevailing influence of the neurotic element in the production and carriage of disease, and thinks that this influence is now more all-pervading than in former years. He is further of opinion that the grit of the English constitution has lessened in robustness, and that, while the average duration of life has increased, healthy life has diminished. He is convinced "that the maladies which owe their origin to a faulty action of the nervous system are of more frequent occurrence in practice than are even phthisis, heart disease, Bright's disease, or organic hepatic disease."

He divides his subject into the following groups:—"The common neurotic conditions which may be said to be essentially central in their whole course; those that are respiratory; those that are cardiac and circulatory; and those that are abdominal, concerning themselves with the stomach and bowel and liver and kidney."

It would be impossible for us to follow him through all the subject, and we should be sorry to spoil what he says with such clearness and force by any attempt at analysis or abstract.

While admitting the truth of most of what he says, in many details we are unable to go with him. He nowhere attempts to define accurately what he understands by a neurosis, and therefore it is not always easy to be sure of what he exactly means,

but it must be something very comprehensive if we are to accept his statement that "there are only two forms of indigestion—that produced by over-eating and drinking and that due to failure of nervous power;" and if by a neurosis the stomach can manufacture sulphuretted hydrogen, or secrete other kinds of gas, and cholesterin can separate from the bile. However, instead of complaining of those few points, in which we think the author has let his subject run away with him, we would prefer to quote a few passages with which we most cordially agree, and which will at the same time give such an idea of the style of the work as will, we are sure, induce many to read it from first to last as we have done with increasing pleasure and interest:—

"And here may be said what need be with reference to uterine and ovarian neuralgiæ. I have said it is a bad day for a man when he first knows he has a heart; it is a ten times worse day for a woman when the pelvic pains, to which so many are subject are focussed for her by medical opinion upon uterus or ovary. If there is anything that curdles my blood it is to hear a woman talk of her ovaries as she might of some intimate acquaintance. One cannot, of course, suppose that organs fulfilling such important functions should have no liability to the aches and pains that all flesh is heir to, or even that they are free from a large measure of disease. We know that it is not so, but there can be no doubt that the ovaries are organs that largely concern themselves with functional disease, and with forms of it, too, that penetrate into the inmost recesses of the patient's being. Do we always remember this at the present day, with all the prevalent means of treating disease locally? Do we not sometimes undertake local treatment hazardously, I mean as regards the chances of *real* improvement, because it can be effected with so little risk to life? Is it not too often 'It cannot do any harm, and it may do good?' Surgery can happily accomplish now much of what it undertakes; but it needs to remember that it has not yet attained to the enucleation of the neurotic constitution. And when I see, as I have seen, the uterine appendages removed for an apparently incurable neuralgia, I see in the measures adopted not the advance of scientific surgery, as some might suppose, but the abasement of the patient, who has been obliged to yield to the force of circumstances" (p. 121).

"In taking leave of my subject let me remind you of what has been my aim in these lectures. It was, in giving you a clinical exposition of the common neuroses, to lay stress on the very certain fact that there are limits to the treatment of this class of diseases by drugs and operation, and that there are many conditions in which the cure must come

mainly from within, our function in chief being to call out this dormant power. I wanted to insist, because I am sure that at the present day we are too likely to forget, that the highest position we can take is to cure people by advice rather than by drugs, to make the public pay for the use of our brains, and not for a prescription of so many ounces of physic." "There is a time to give drugs, and even to give them with a free hand, but there is equally a time when advice only is needed, and not physic—shall I stop there? no, when to give drugs is quackery! Yes, there are times when to give medicine is to give *poison*, for it sends the poor patient on a hunt for health which no physic will procure, and it lets slips the opportunity—in the exigencies of human pain, and of suffering of all kinds, too seldom fit—of pointing the ignorant to a future of medicine which both for us and for them is an ideal to be hoped for, to be striven for" (p. 126).

Modern Materia Medica for Pharmacists, Medical Men, and Students. By H. Helbing, F.C.S. Third enlarged Edition. New York: Lehn & Fink. London: *The British and Colonial Druggist.* 1892. 8vo. Pp. 202.

The principal subject-matter of this work is the discussion of the chemistry, the pharmacology, and the therapeutics of that interesting class of modern remedies known as synthetical compounds.

That some such book was called for is evidenced by the fact that the work before us not only has run through three editions in a wonderfully short time, but also has vastly increased in size. It is divided into two parts—"Modern Materia Medica" and a lengthy "Appendix," this latter containing an account of those compounds which seem to be at present of insufficient importance to require detailed description in the first part of the work, as well as of those which are not purely synthetical remedies.

At the close are three elaborate tables giving the doses of selected new remedies at different periods of life, their solubility in water and spirit, and their melting and boiling points in centigrade degrees. A well arranged index concludes the book.

There is a general outcry against the fanciful names which have been given to many of the synthetical remedies of the present day—but they have really been rendered necessary by the outlandish nomenclature of chemical synthesis. For example, it is better to speak of "antipyrin" or "phenazone" than of "dimethylphenylpyrazolon," or "dehydrodimethylphenylpyrazin;" of "euro-

phen" than of "di-isobutylorthocresol iodide;" of "orexin" than of "phenyldihydrochinazoline hydrochloride;" of "saccharin" or "gluside" than of "benzoyl-sulphonic-imide;" of "sozoiodol" than of "diiodparaphenolsulphonic acid;" and of "sulphonal" than of "diethylsulphondimethyl-methane." One of the newest antipyretics is called "ortho-oxyethel-ana-mono-acetylamidochinoline." These compound words ("jaw-breakers," as they were called in our school-days) remind one of the σπερμ-αγοραιο-λεκιθο-λαχανο-πῶλις, the "*green-grocery-market-woman*" of Aristophanes; or of his ὀρθρο-φοιτο-συκοφαντο-δικο-ταλαίπωροι τροποι, "*early-prowling, base-informing, sad litigious, plaguy ways.*"

In the so-called "Appendix" will be found a series of short but very valuable articles, including new compounds of bismuth, gold, mercury, zinc, and quinine, a number of salicylates, and, of course, "tuberculin" and "tuberculocidin."

We congratulate Mr. Helbing on the manner in which he has executed his self-imposed task.

Saunders' Question-Compends. No. 22. Essentials of Physics. Arranged in the form of Questions and Answers. Prepared especially for Students of Medicine. By Fred. J. Brockway, M.D.; Assistant Demonstrator of Anatomy at the College of Physicians and Surgeons, New York. Philadelphia: W. B. Saunders. 1892. Pp. 330.

In the number of this Journal for September we noticed with approval Nos. 20 and 23 of Saunders' "Question-Compends." The author of the "Essentials of Physics" (No. 22 of the same series), Dr. Fred. J. Brockway, of New York, appears to have discharged his duty with equal success, and—as he himself says—to have compiled a book which is a mean between Ganot's treatise on the one hand and some elementary text-books on physics which do not contain all that it is necessary for a medical student to know.

Opening with a full list of abbreviations, the work is divided into five books—on matter and its properties, heat, light, sound, magnetism, and electricity. The amount of ground traversed is, therefore, marvellous. The answers to the different questions are given as a rule clearly and in concise language. In many cases pictorial illustrations lend their aid to the student; these have been taken by permission from Ganot's *Physics*, Gage's *Elements of Physics*, and Atkinson's *Dynamical Electricity*.

Although in general we have no great liking for royal roads to learning and "Students' Aids," we are bound to confess that in Saunders' "Question-Compends" medical students possess a sound and reliable guide to knowledge; nor is Dr. Brockway's work an exception. We have practically tested its utility in the case of candidates at a Prize Examination in Physics, and have not found it wanting.

Year-Book of the Scientific and Learned Societies of Great Britain and Ireland, comprising Lists of the Papers read during 1891 *before Societies engaged in Fourteen Departments of Research, with the names of their Authors.* Compiled from official sources. Ninth Annual Issue. London: Charles Griffin & Co, Limited. 1892.

For all engaged in the literary branch of medicine this Year-Book is, we think, necessary. We need not dilate on the advantages of having an index of the papers read during the year on medicine and all the collateral branches of science. Time and trouble is saved, and a more full and accurate paper can be produced than is possible by unaided research. It is a synopsis of the work done in fourteen departments of science, and shows at a glance the progress of the year in scientific subjects, and all who are interested in promoting science will find it a reliable, well arranged, and useful book of reference.

On the Medical and Surgical Uses of Electricity. By George M. Beard, A.M., M.D.; and A. D. Rockwell, A.M., M.D., formerly Professor of Electro-Therapeutics in the New York Post Graduate Medical School and Hospital; Fellow of the New York Academy of Medicine; Member of the American Academy of Medicine; Member of the New York Neurological Society; formerly Electro-Therapeutist to the Woman's Hospital of the State of New York, &c. Eighth Edition. With over two hundred illustrations. London: H. K. Lewis. 1891.

When an eighth edition of a book is reached it may fairly be said to have passed out of the province of the reviewer. In the present case there is little left for us to do other than point out the differences which distinguish this edition from the seventh. The chapters upon diseases of women, electrical apparatus, static

electricity have been largely recast, additions made to the chapter on electro-diagnosis, and many new and improved illustrations, representing practical and important methods of application, supply the places of the old ones, and some old matter has been dropped out.

Electricity has not performed the wonders its advocates hoped for from it; nevertheless it has a useful place in medicine, both as a therapeutic remedy and as an aid in diagnosis.

Influenza: its Pathology, Symptoms, Complications, and Sequels; its Origin and Mode of Spreading; and its Diagnosis, Prognosis, and Treatment. By JULIUS ALTHAUS, M.D., M.R.C.P. Lond.; Senior Physician to the Hospital for Epilepsy and Paralysis, Regent's Park. Second Edition, much enlarged. London: Longmans & Co. 1892. 12mo. Pp. 407.

THIS complete and valuable treatise on influenza appears when—we must not say "unfortunately"—the disease has ceased to trouble us, and its value is rather historical than practical. The author seeks to "Americanise our institutions." He calls his subject "influenza" as little as possible, preferring "grip"—which appears to us, we confess, the less of two evils—and forming from it an uncouth series of derivatives—"gripped," "grippal," "post-grippal," even "grippo-toxine"—which will make many shudder. He is addicted also to the American use of "recuperate" intransitively, which is "un-English," and, therefore, intrinsically infamous. But let us consider, as it deserves, what Dr. Althaus says, not how he says it. Though the immediate danger has passed away recurrence of the epidemic is always possible; and few will agree with Broussais, who, in 1889, published his opinion in the *Revue Générale de Clinique et de Thérapeutique*, that influenza was "an invention of needy people, of doctors without patients, whose time hung heavily on their hands, and who had amused themselves with inventing such a bogey." After a short chapter on the bacteriology of the disease, in which the opinion is expressed that the symptoms are due to the presence in the blood of a poisonous albuminoid secreted (or excreted) by a specific bacillus, the symptoms of the attack are described, and it is argued that it is an infectious *nervous* fever. It is pointed out that the nervous sequelæ of influenza are more numerous than those of any other febrile disease, or even than all of them put together. "As

a powerful ætiological factor of protean forms of nerve-disease, influenza stands *facile princeps* amongst all infectious fevers." Although there are three distinct forms of the disease—encephalic, thoracic, and abdominal—the differences of manifestation are not essential, and influenza is always fundamentally a nervous fever. One of the most prominent characters of the disease is the extraordinary degree of nervous prostration which it induces, and this leads the author to a theory that the specific poison has a special effect upon the cardiac and respiratory centres in the bulb. Why the "grippo-toxine" should have a special influence on these centres can only be answered by pointing to analogous cases, such as strychnin, tetanus, lead, &c. Is there any pathological evidence in support of this theory? In the asylum of Aarhus, in Denmark, 41 cases of influenza occurred, of which 11 were fatal. In all these "was found intense hyperæmia of the pia mater and brain, such as is never seen in any other cases, and this was more particularly marked at the base of the brain." Goodall's report of 13 autopsies made in the Wakefield Asylum does not give similar results to these of Helweg, but Maillart's, in the Genevan Cantonal Hospital, are confirmatory of the theory. In all Maillart's cases "in which notes of the condition of the brain were taken definite lesions were found, implicating either the membranes, or the blood-vessels, or the substance of the brain."

In connection with influenza a peculiar disease, to which the name of Nona was given, appeared in North Italy and Switzerland, and attracted a good deal of attention. It was characterised by profound somnolence, supervening upon or coincident with the primary influenza, and generally fatal. It appears to have been a form of cerebro-spinal meningitis consequent on influenza. Several cases recorded by foreign physicians are given by Dr. Althaus in this second chapter.

On one point the author differs from all other physicians who have treated of this disease. Maintaining that a specific virus, which he calls "grippo-toxine," is the principal cause of the psychoses which occur during or after the influenzal attack, he denies the necessity for neurotic predisposition, hereditary or acquired, in the patients affected by such complications. In 107 such cases neurotic predisposition was traceable in 62·8 per cent. "Predisposition, therefore," he says, "although undoubtedly an important adjuvant in the production of these psychoses, is plainly shown not to be their exclusive ætiological factor." He considers

that "individual idiosyncrasy is carried to a very high pitch in the response of patients to the action of grippo-toxine," and attributes to it, unaided by predisposition, the mental disorders which unquestionably follow influenza in greater proportion than any other infectious disease. He suggests also that the specific virus of influenza may have a specially deleterious effect upon the grey matter of the cortex.

The fourth chapter is devoted to the origin and mode of diffusion of the disease. Tessier regards it as endemic in Russia, and attributes it to the unsanitary habits of the people, which, however, prevail elsewhere without producing influenza. Others trace it to the Manchurian inundations of 1888 and 1889 in China; but it is in evidence that China is indebted for infection to the English mail steamer which arrived at Hong Kong with cases on board in January, 1890. Others blame, with even less reason, the Krakatoan eruption of 1883. We may cheerfully acquiesce in ignorance of its origin. Its mode of spreading is of practical importance, and we shall give in Dr. Althaus' own words his conclusions on the subject (p. 285):—

"Influenza is an infectious disease, owing in the first instance to the development of Pfeiffer's bacillus outside the human system. Under the influence of certain conditions, with the nature of which we are as yet unacquainted, this bacillus increases and multiplies to such an extent as to become the efficient agent in causing influenza. After this has once commenced it easily spreads from one person to another, in the same way as measles, small-pox, or scarlet fever, either by actual contact or by 'fomites,' that is, infected materials, such as clothing, or goods of any description which may have become imbued with Pfeiffer's bacillus. With regard to its progress, grip follows the established lines of human intercourse, and spreads at about the same pace as men are in the habit of travelling at those times and places where it becomes epidemic. It has nothing to do with meteorological conditions; advances independently of climate, season, wind, and weather; and affects large masses of the population at the same time, for the following reasons:—1st, because it has a very short period of incubation—viz., about two days; 2nd, because men are exceedingly susceptible to infection by this particular bacillus; and, 3rd, because the bacillus is propagated not only by persons who are ill in bed, but by many people who have the complaint in a mild form, and therefore continue to move about and pursue their ordinary avocations, thus forming focuses of infection for all those who may happen to come in contact with them. Germs or spores of the bacillus may remain undestroyed for a considerable time, and may, under the

influence of favourable conditions, lead to fresh multiplication of the bacillus, and therefore to fresh outbreaks of the disease."

We observe with pleasure that Dr. Althaus argues—at unnecessary length, it seems to us—against the identity of influenza and dengue. It is enough to say that dengue is attended by one or two eruptions, while in influenza cutaneous symptoms are rare exceptions.

A very copious list of bibliographical references, an index of authors, and index of subjects complete this excellent work.

The Drainage of Habitable Buildings. By W. Lee Beardmore. London: Whittaker & Co. 1892. Pp. 89. Illustrated.

This is a reprint of papers which appeared in a technical journal during the past ten years. It contains in a condensed but readable form a good deal of information about the construction of drains and the disposal of sewage. It is not sensational enough to attract the attention of the careless, or large enough to act as a book of reference, but for thoughtful readers, who wish to keep "up to date" in practical sanitation, this book will be found useful, and we can recommend it to medical men whose advice on sanitary matters is so frequently sought and valued.

The Maritime Provinces of Canada. A Handbook of General Information. Published under the authority of the Canadian Government. London: M'Corquodale & Co. 1892. 8vo. Pp. 122.

The object of this pamphlet is to supply more detailed information respecting the agricultural and other resources of the Maritime Provinces of Canada than is given in the general pamphlets issued by the Dominion Government. The work is also intended to complete the series of the reports of the tenant-farmers' delegates on the agriculture of the Dominion in 1890, in which year the members of the delegation had not sufficient time at their disposal to visit Nova Scotia, New Brunswick, and Prince Edward Island.

The statistical and general information stored in the pages of this useful "pamphlet," and especially a chapter containing advice to intending emigrants, will no doubt prove useful to those persons

who may be contemplating settlement in Nova Scotia, New Brunswick, or Prince Edward Island. Any further information respecting these Maritime Provinces or other provinces of the Dominion may be obtained on application to the High Commissioner for Canada, 17 Victoria-street, London, S.W., or to any of the Government agents in Great Britain or Canada, whose names and addresses will be found on page 116 of the "Handbook."

Transactions of the Medical and Chirurgical Faculty of the State of Maryland. Ninety-third Annual Session, held at Baltimore, Maryland, April, 1891. 8vo. Pp. 397.

THIS Faculty was originally a corporation chartered for conferring qualifications in medicine and surgery, and, in its early years, was the only door that led to professional practice in Maryland. Its legal rights as a licensing body are in abeyance, without prospect of revival; and the Faculty is now only an ordinary medical and surgical society, meeting to hear addresses, papers, &c., twice a year. Our notice of the number of its Transactions now before us is so belated that we shall merely call attention to the Report of the Section on Ophthalmology, Otology, and Laryngology, which is devoted to the remarkable increase of blindness in the United States. "An increase out of all proportion to the simultaneous growth of population."

In the Transactions of the *American Ophthalmological Society* for 1887 Dr. Lucien Howe, of Buffalo, published a paper on the subject. Comparing the Census of 1870 with that of 1880, he pointed out that in the decade the population of the United States had increased 39·09 per cent., the number of blind 140·78. He found that the blindness rate increased from north to south, and decreased from east to west. Blindness is most prevalent in the eastern States, and more prevalent there in the thickly populated than in the rural districts. He estimates the financial loss due to blindness in 1880 at £1,600,000. One result of Dr. Howe's paper was the appointment of a Committee "to enquire into the correctness of these statistics, and to find the causes of this increase in the number of the blind." It was ascertained that in the State of New York population had increased in the decade by 15·9 per cent., blindness by 125·7. Blindness had increased 8·2 as rapidly as population. In Maryland State, in the same decennial period, population had grown about 20 per cent., blindness 121.

As to causation—the committee found that in New York State, omitting 2·27 per cent. congenitally blind, 43·01 per cent. was due to four diseases, "two of which, ophthalmia neonatorum and sympathetic ophthalmia, are preventable by prophylaxis, and three, ophthalmia neonatorum, and trachoma, and corneal disease, either altogether curable, or capable of marked benefit, if proper treatment be instituted soon after the diseases are established."

Ophthalmia neonatorum, a preventable disease, and generally curable if treated early, is the cause, according to Magnus, of 23·5 per cent. of cases of European blindness under twenty years of age; of 10·87 per cent. of all cases in Europe; of 14·51 per cent. of the blindness in New York State; and of 17·5 per cent. of the blindness in Maryland schools.

Dr. Coltman on "The Chinese."

In our review of this interesting work, which appeared in our number for September (page 217), we omitted to mention that the publishers are the F. A. Davis Company of Philadelphia and London. The volume does credit to the enterprise and world-wide reputation of this firm.

TRACHEOTOMY IN FLORENCE.

Lo Sperimentale of March 15, 1892, reports a meeting of the *Accademia Medico-fisica Fiorentina*, held on March 7th. Professor Bajardi communicated the result of 115 tracheotomies, 63 performed for idiopathic croup and 52 for croup complicated with faucial and nasal diphtheria. Of the former group 42·85 per cent. recovered; of the latter, 34·61; of the total, 30·13. Death occurred most frequently from the 1st to the 4th day after the operation. In 5 cases the patients died on the table, of whom 3 were moribund from protracted asphyxia.

COMPRESSED MEDICINES.

The United States War Department has contracted for 200 chests of compressed medicines for use in the army and navy. Each chest—$23'' \times 14\frac{1}{2}'' \times 17\frac{3}{4}''$—contains 60 square bottles of different medicines, in compressed tablet form, none larger than an ordinary peppermint lozenge. If the contents of the chest were liquefied to their customary bulk one half of a regular railway truck would be necessary for stowage. Two chests, one "medical supply," the other "surgical," are allotted to each battalion of 200 men. The weight of each chest is 85 lbs. Whisky, brandy, alcohol, and castor oil are carried in the liquid condition; but cod-liver oil is compressed.

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point. The ninth, tenth, and eleventh dorsal vertebræ were carious, and there was cerebral tubercular meningitis. The disease had started in the internal surface of the dura mater, and the bone disease was secondary. That this was the course of the case is shown by the following facts:— (1) The external surface of the dura was healthy, the internal diseased. (2) The spinal disease did not show itself till three years after the paraplegia had become complete.

Horny Epithelial Tumour.

Dr. Arthur Benson showed a tumour which he had removed from the outer side of the left brow of a woman, aged about thirty, in St. Mark's Ophthalmic Hospital. It was not adherent either to the skin or the bone, and was removed under the impression that it was an ordinary dermoid tumour. It had been present all her life, and except for the disfigurement, was no trouble to her, though she thought it was growing a little larger. The tumour was oval, and about three-quarters of an inch long and half an inch wide.

Dr. Graves showed microscopic sections of the horny epithelial tumour. The tumour was completely invested by a strong fibrous capsule which sent in many trabeculæ, dividing off the masses of epithelial cells of which the tumour was composed. The great bulk of these epithelial cells were horny. In one place these horny cells were seen to be directly connected with a mass of Malpighian cells. This tumour was precisely similar, in macroscopic and microscopic appearance, to a tumour removed from the neck by Mr. Wheeler, and exhibited last year at the Pathological Section of the Royal Academy of Medicine (*Transactions*, Vol. IX., page 428).

Artificial Dental Caries.

Dr. A. W. W. Baker read a paper upon artificial dental caries, and showed microscopic specimens. [It will be found at page 200.]

Perforating Ulcer of Stomach.

Dr. Joseph Redmond exhibited a case of perforating ulcer of the stomach in a male aged sixty. On opening the stomach it was found to contain two solutions of continuity, the larger of which, situated on the posterior wall, measured 4 inches × $2\frac{1}{2}$ inches. The floor of the ulcer was formed by the pancreas, to which it was intimately adherent. The smaller ulcer was situated about one inch to the lower and mesial side of the œsophageal opening, and separated from the larger by a distance of about $1\frac{1}{4}$ inches. Its shape was nearly circular, and was about one inch in diameter. Its floor was irregular, without any trace of hæmorrhage, and at one corner was the perforation which had occasioned the fatal termination.

Pedunculated Sarcoma of Cerebellum.

Dr. M'Weeney read a paper on a case of pedunculated sarcoma of the cerebellum which had occurred at the Mater Misericordiæ Hospital. The patient, J. S., had been admitted on Jan. 11 to the Mater Hospital under the care of Mr. Hayes, suffering from persistent vomiting and headache, and from debility and insomnia, the result of these symptoms. Twelve months previously he had been unconscious for two hours after a severe fall, but apparently recovered his usual health till about four months previous to admission, when the vomiting began to be troublesome. On examination the right side of the tongue was found insensible to impressions of taste, and there was almost complete deafness of the right ear, which he had noticed only three weeks before admission. The right pupil was larger than the left, and reacted to light. There was no optic neuritis and no facial paralysis. Cough was troublesome, and there was a certain amount of bronchitis. Urine small in quantity, of sp. gr. 1032–36. Urates present in abundance, no other abnormality. Bowels confined; temp. occasionally rose to 100°–101° F. Skin always dry. The patient became suddenly comatose and died on the 29th of Jan. *Post-mortem*—a disc-shaped pedunculated tumour was found on the right side of the under-surface of the cerebellum. Its inner aspect was closely oppressed to the crus, pons, and medulla, which were flattened and distorted by the pressure. The tumour lay in front of the amygdala of the cerebellum. The exact shape of the tumour was that of a somewhat crumpled and convoluted roughly circular disc, of which one surface looked upwards and inwards, the other downwards and outwards. The diameter of the disc was $1\frac{3}{4}$ inch; its thickness averaged $\frac{1}{3}$ inch. Its peduncle was very riband-shaped, and entered the cerebellum about the region of the flocculus, slightly posterior to the roots of the facial and auditory nerves. The bulging caused by the passage sideways of the superficial fibres of the pons was quite obliterated by the tumour, and the 7th and 8th pairs of nerves were adherent to the upper surface of the disc. The pneumogastric and glossopharyngeal nerves were adherent to the posterior edge of the disc, flattened and disintegrated into small bundles of fibres. The peduncle of the tumour seemed to run into the white centre of the cerebellum, and near the upper surface of that organ in the quadrate lobule was a remarkable vascular condition consisting of a plexus of large thin-walled veins ($\frac{1}{5}$ inch diameter), lying both in the medullary substance and in the gray matter of the sulci. Microscopic examination showed the tumour to be composed chiefly of sarcoma-tissue, the cells being of various shapes, the nuclei close-packed, oval, vesicular or epithelioid. There was no definite grouping of the cells, and round the large venous blood-spaces which abounded in the sections, the cells were affected for some distance with hyaline degeneration. The cortical substance of the cerebellum, with its two layers and intervening Purkinje's

ganglion, cells were found by serial sections to extend on the outside of the tumour for some distance, the nervous layer gradually becoming thinner and thinner. The cerebellar cortex in the neighbourhood of the peduncle of the tumour showed no microscopic change save thinning of the layer of granules, and a certain amount of diminution in the number of medullated fibres. The area occupied by the venous plexus was, save for its presence, healthy, the nerve fibres coming right up to the margins of the large veins. Dr. M'Weeney demonstrated a series of sections from different parts of the growth, stained with Delafield's hæmatoxylin and eosin, picrolithio-carmine, Weigert's and Pàl's methods, and with Sahli's borax-methylene-blue.

Ovarian Cyst.

Dr. Graves showed an enlarged prostate, dilated ureters and diseased kidneys with microscopic sections, for the President of the Royal College of Surgeons in Ireland.

Dr. Graves also showed a large multilocular ovarian cyst for Dr. Wheeler.

(*a*) *Dry Gangrene of Finger in a Patient, aged Fifteen;* (*b*) *Lacerated Wound of Heart.*

Mr. F. A. Nixon showed—

(*a*) Dry gangrene of finger caused by an incised wound in a patient, a young lady, aged fifteen years.

(*b*) Lacerated wound of heart caused by a runaway horse. Patient was brought into hospital. There were four ribs broken on the left side without laceration of lung or pleura. The pericardium was filled with blood, which came from a lacerated non-penetrating wound of the left ventricle.

The Section then adjourned.

ARCHIVES CLINIQUES DE BORDEAUX.

The Bordeaux *Faculty of Medicine* was founded in 1878, and a powerful impulse was thereby given to medical studies and medical science. A monthly journal devoted to clinical medicine has been established, and its first number (Jan., 1892) is before us. It is to be devoted exclusively to clinical medicine and the related sciences. It will contain only original matter—no reports of learned societies, no controversies, no discussions on the interests of the profession, and will not enter into competition with the periodicals occupied with such matters. It will publish clinical lectures, bearing upon rare or interesting cases, or upon the author's personal experiences, and original papers based upon clinical or anatomo-pathological observations. The number contains 48 octavo pages, and costs $1\frac{1}{2}$ franc.

SANITARY AND METEOROLOGICAL NOTES.

Compiled by J. W. Moore, B.A., M.D., Univ. Dubl.; F.R.C.P.I.; F. R. Met. Soc.; Diplomate in State Medicine and ex-Sch. Trin. Coll. Dubl.

Vital Statistics

For four Weeks ending Saturday, August 13, 1892.

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	July 23.	July 30.	August 6.	August 13.		July 23.	July 30.	August 6.	August 13.
Armagh -	14·0	7·0	0·0	7·0	Limerick -	21·1	11·2	18·2	18·2
Belfast -	26·9	21·8	21·8	28·5	Lisburn -	12·8	25·5	12·8	4·3
Cork -	24·2	24·9	12·5	24·9	Londonderry	23·6	4·7	6·3	18·8
Drogheda	17·6	26·4	13·2	22·0	Lurgan -	27·4	22·8	36·5	13·7
Dublin -	19·4	27·7	20·3	21·5	Newry -	28·2	24·1	20·1	16·1
Dundalk -	4·2	50·3	20·9	16·8	Sligo -	20·6	10·2	10·2	20·3
Galway -	18·9	34·0	15·1	15·1	Waterford -	17·5	27·5	17·5	20·0
Kilkenny	18·9	4·7	14·2	28·3	Wexford -	4·5	13·5	13·5	27·1

In the week ending Saturday, July 23, 1892, the mortality in thirty-three large English towns, including London (in which the rate was 19·0), was equal to an average annual death-rate of 17·7 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·4 per 1,000. In Glasgow the rate was 18·9, and in Edinburgh it was 20·0.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 21·8 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·0 per 1,000, the rates varying from 0·0 in Waterford, Galway, Dundalk, Drogheda, Wexford, and Armagh, to 12·1 in Newry—the 7 deaths from all causes registered in the last-named district comprising 1 from measles, 1 from scarlatina, and 1 from

whooping-cough. Among the 132 deaths from all causes registered in Belfast are 13 from measles (being equal to the number for the preceding week), 2 from scarlatina, 3 from whooping-cough, 2 from diphtheria, and 6 from diarrhœa. The 35 deaths in Cork comprise 2 from measles and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 183—96 boys and 87 girls; and the registered deaths to 133—66 males and 67 females.

The deaths, which are 16 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 19·8 in every 1,000 of the population. Omitting the deaths (numbering 3) of persons admitted into public institutions from localities outside the district, the rate was 19·4 per 1,000. During the first twenty-nine weeks of the current year the death-rate averaged 33·5, and was 4·7 over the mean rate in the corresponding period of the ten years 1882–1891.

Twenty-two deaths from zymotic diseases were registered, being 3 over the number for the week ended July 16, and 1 above the average for the 29th week of the last ten years. They comprise 7 from measles (showing a decline of 2 as compared with the number from that cause in the preceding week), 2 from whooping-cough, and 4 from diarrhœa.

Only 10 cases of measles were admitted to hospital, being 10 below the admissions for the preceding week, and the lowest number for any week since that ended the 27th of February last. Fifteen measles patients were discharged, and 48 remained under treatment on Saturday, being 5 under the number in hospital at the close of the preceding week.

The number of cases of enteric fever admitted to hospital was 6, being 1 under the number for the preceding week. Five patients were discharged, 1 died, and 36 remained under treatment on Saturday, being equal to the number in hospital on Saturday, July 16.

The hospital admissions for the week include, also, 2 cases of scarlatina, but no cases of typhus were received: 14 cases of scarlatina and 2 of typhus remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system is 20, being equal to the average for the 29th week of the last ten years, but 7 under the number for the week ended July 16. The 20 deaths comprise 7 from bronchitis and 12 from pneumonia or inflammation of the lungs.

In the week ending Saturday, July 30, the mortality in thirty-three large English towns, including London (in which the rate was 17·5), was equal to an average annual death-rate of 17·3 per 1,000 persons living. The average rate for eight principal towns of Scotland was 17·5 per 1,000. In Glasgow the rate was 19·4, and in Edinburgh it was 16·3.

The average annual death-rate in the sixteen principal town districts

of Ireland was 23·6 per 1,000 of the population according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·2 per 1,000, the rates varying from 0·0 in eight of the districts to 8·0 in Newry—the 6 deaths from all causes registered in that district comprising 2 from whooping-cough. Among the 107 deaths from all causes registered in Belfast are 4 from measles (being a decrease of 9 as compared with the number for the preceding week), 1 from scarlatina, 1 from whooping-cough, 1 from diphtheria, 2 from enteric fever, and 7 from diarrhœa. The 36 deaths in Cork comprise 1 from measles and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 191—94 boys and 97 girls; and the registered deaths to 190—94 males and 96 females.

The deaths, which are 45 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 28·3 in every 1,000 of the population. Omitting the deaths (numbering 4) of persons admitted into public institutions from localities outside the district, the rate was 27·7 per 1,000. During the first thirty weeks of the current year the death-rate averaged 33·4, and was 4·8 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 17, being 5 under the number for the week ended July 23, and 2 below the average for the 30th week of the last ten years. The 17 deaths comprise 8 from measles (showing an increase of 1 as compared with the number from that cause in the preceding week), 1 from whooping-cough, 1 from simple continued fever, and 3 from diarrhœa.

Twenty-four cases of measles were admitted to hospital, being 14 over the admissions for the preceding week. Sixteen measles patients were discharged and 56 remained under treatment on Saturday, being 8 over the number in hospital at the close of the preceding week.

Seven cases of enteric fever were admitted to hospital, against 6 admissions for the preceding week. Three patients were discharged and 40 remained under treatment on Saturday, being 4 above the number in hospital on Saturday, July 23.

The hospital admissions for the week include, also, 1 case of small-pox, 3 cases of scarlatina, and 1 case of typhus: 1 case of small-pox, 16 cases of scarlatina, and 2 of typhus remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system is 29, being 12 over the average for the corresponding week of the last ten years, and 9 over the number for the week ended July 23rd. The 29 deaths comprise 18 from bronchitis, 4 from pneumonia or inflammation of the lungs, and 1 from pleurisy.

In the week ending Saturday, August 6, the mortality in thirty-three large English towns, including London (in which the rate was 17·2), was equal to an average annual death-rate of 17·4 per 1,000 persons living. The average rate for eight principal towns of Scotland was 18·5 per 1,000. In Glasgow the rate was 19·9, and in Edinburgh it was 16·3.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 18·9 per 1,000 of the population based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·0 per 1,000, the rates varying from 0·0 in eight of the districts to 14·2 in Kilkenny—the 3 deaths from all causes registered in that district consisting of 1 from typhus and 2 from diarrhœa. Among the 107 deaths from all causes registered in Belfast are 2 from measles (being a decrease of 2 as compared with the number for the preceding week), 2 from whooping-cough, 1 from simple continued fever, 2 from enteric fever, and 5 from diarrhœa. The 3 deaths in Lisburn comprise 1 from measles and 1 from enteric fever.

In the Dublin Registration District the registered births amounted to 205—114 boys and 91 girls; and the registered deaths to 144—80 males and 64 females.

The deaths, which are 5 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 21·5 in every 1,000 of the population. Omitting the deaths (numbering 8) of persons admitted into public institutions from localities outside the district, the rate was 20·3 per 1,000. During the first thirty-one weeks of the current year the death-rate averaged 33·0, and was 4·7 over the mean rate in the corresponding period of the ten years 1882–1891.

Eighteen deaths from zymotic diseases were registered, being 1 over the average for the week ended July 30th, but 3 below the average for the 31st week of the last 10 years. They comprise 6 from measles (showing a decrease of 2 as compared with the number from that cause in the preceding week), 2 from whooping-cough, and 5 from diarrhœa.

The number of cases of measles admitted to hospital was 22, being 2 below the admissions for the preceding week: 23 measles patients were discharged, and 55 remained under treatment on Saturday, being 1 under the number in hospital at the close of the preceding week.

Nine cases of enteric fever were admitted to hospital, against 7 admissions for the preceding week. Nine patients were discharged, 1 died, and 37 remained under treatment on Saturday, being 1 under the number in hospital on Saturday, July 30.

The hospital admissions for the week include, also, 2 cases of scarlatina: 12 cases of this disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system was 17,

being 1 over the average for the corresponding week of the last ten years, but 12 below the number for the week ended July 30. The 17 deaths consist of 11 from bronchitis and 6 from pneumonia or inflammation of the lungs.

In the week ending Saturday, August 13, the mortality in thirty-three large English towns, including London (in which the rate was 17·4), was equal to an average annual death-rate of 18·0 per 1,000 persons living. The average rate for eight principal towns of Scotland was 17·0 per 1,000. In Glasgow the rate was 18·7, and in Edinburgh it was 14·9.

The average annual death-rate in the sixteen principal town districts of Ireland was 23·0 per 1,000 of the population according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 2·1 per 1,000, the rates varying from 0·0 in nine of the districts to 8·4 in Dundalk—the 4 deaths from all causes registered in that district comprising 2 from simple continued fever. Among the 140 deaths from all causes registered in Belfast are 2 from measles, 1 from whooping-cough, 1 from diphtheria, 1 from simple continued fever, 1 from enteric fever, and 10 from diarrhœa. The 36 deaths in Cork comprise 2 from measles.

In the Dublin Registration District the registered births amounted to 201—112 boys and 89 girls; and the registered deaths to 145—69 males and 76 females.

The deaths, which are 9 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 21·6 in every 1,000 of the population. Omitting the death of one person admitted to hospital from without the district, the rate was 21·5 per 1,000. During the first thirty-two weeks of the current year the death-rate averaged 32·6, and was 4·4 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 18, being equal to the number for the preceding week, but 6 below the average for the 32nd week of the last ten years. The 18 deaths comprise 5 from measles (showing a decrease of 1 as compared with the number from that cause in the preceding week), 2 from whooping-cough, 6 from diarrhœa, and 1 from erysipelas.

The number of cases of measles admitted to hospital was 20, being 2 under the admissions for the preceding week: 10 measles patients were discharged, and 65 remained under treatment on Saturday, being 10 over the number in hospital at the close of the preceding week.

Only 5 cases of enteric fever were admitted to hospital, being 4 under the admissions for the preceding week, and 2 under the number

for the week ended July 30. Three patients were discharged, and 41 remained under treatment on Saturday, being 2 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 7 cases of scarlatina (against 2 for the preceding week): 15 cases of this disease remained under treatment in hospital on Saturday.

Only 9 deaths from diseases of the respiratory system were registered, being 11 below the average for the corresponding week of the last ten years, and 8 under the number for the week ended August 6. They comprise 3 from bronchitis, and 3 from pneumonia or inflammation of the lungs.

Vital Statistics

For four Weeks ending Saturday, September 10, 1892

The deaths registered in each of the four weeks in the sixteen principal Town Districts of Ireland, alphabetically arranged, corresponded to the following annual rates per 1,000:—

Towns	Weeks ending				Towns	Weeks ending			
	Aug. 20	Aug. 27	Sept. 3	Sept. 10		Aug. 20	Aug. 27	Sept. 3	Sept. 10
Armagh	21·0	28·0	14·0	21·0	Limerick	14·0	9·8	8·4	14·0
Belfast	17·7	22·0	24·9	25·3	Lisburn	4·3	17·0	12·8	8·5
Cork	15·9	24·2	18·0	14·5	Londonderry	25·1	4·7	14·1	20·4
Drogheda	22·0	17·6	17·0	8·8	Lurgan	13·7	9·1	36·5	13·7
Dublin	18·5	23·4	25·5	27·4	Newry	12·1	16·1	8·1	28·2
Dundalk	8·4	16·8	8·4	0·0	Sligo	10·2	30·5	10·2	0·0
Galway	30·2	34·0	22·7	18·9	Waterford	22·5	20·0	22·5	20·0
Kilkenny	18·9	23·6	33·0	4·7	Wexford	4·5	13·5	36·1	13·5

In the week ending Saturday, August 20, 1892, the mortality in thirty-three large English towns, including London (in which the rate was 17·2), was equal to an average annual death-rate of 18·0 per 1,000 persons living. The average rate for eight principal towns of Scotland was 17·2 per 1,000. In Glasgow the rate was 18·3, and in Edinburgh it was 16·7.

The average annual death-rate represented by the deaths registered during the week in the sixteen principal town districts of Ireland was 17·7 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 3·0 per 1,000, the rates varying from 0·0 in ten of the districts to 5·7 in Belfast—the 87 deaths from all causes registered in that district comprising 5 from measles (being an increase of 3 as compared with the number for the preceding week), 1 from scarlatina, 2 from whooping-cough, 3 from enteric fever, and 17 from diarrhœa.

In the Dublin Registration District the registered births amounted to 203—107 boys and 96 girls; and the registered deaths to 131—76 males and 55 females.

The deaths, which are 29 under the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 19·5 in every 1,000 of the population. Omitting the deaths (numbering 7) of persons admitted to public institutions from localities outside the district, the rate was 18·5 per 1,000. During the first thirty-three weeks of the current year the death-rate averaged 32·2, and was 4·2 over the mean rate in the corresponding period of the ten years 1882–1891.

Twenty-two deaths from zymotic diseases were registered, being 4 over the number for the week ended August 13, but 6 below the average for the 33rd week of the last ten years. They comprise 3 from measles (showing a decrease of 2 as compared with the number of deaths from that cause in the preceding week), 1 from scarlatina, 1 from whooping-cough, 1 from diphtheria, 2 from enteric fever, and 12 (including 11 deaths of children under 5 years old) from diarrhœa.

The number of cases of measles admitted to hospital was 14, being 6 under the admissions for the preceding week: 21 measles patients were discharged and 58 remained under treatment on Saturday, being 7 under the number in hospital at the close of the preceding week.

Ten cases of enteric fever were admitted to hospital against 5 admissions for the preceding week. Eight patients were discharged, 2 died, and 41 remained under treatment on Saturday, being equal to the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 4 cases of scarlatina, but no cases of typhus were received: 17 cases of the former, and 2 of the latter disease remained under treatment in hospital on Saturday.

Only 8 deaths from diseases of the respiratory system were registered. being 9 below the average for the corresponding week of the last ten years, and 1 under the number for the week ended August 13. They comprise 3 from bronchitis and 2 from pneumonia or inflammation of the lungs.

In the week ending Saturday, August 27, the mortality in thirty-three large English towns, including London (in which the rate was 17·2), was equal to an average annual death-rate of 18·5 per 1,000 persons living.

The average rate for eight principal towns of Scotland was 16·2 per 1,000. In Glasgow the rate was 16·5, and in Edinburgh it was 17·5.

The average annual death-rate in the sixteen principal town districts of Ireland was 21·3 per 1,000 of the population, according to the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 2·5 per 1,000, the rates varying from 0·0 in nine of the districts to 4·7 in Belfast—the 108 deaths from all causes registered in that district comprising 1 from scarlatina, 2 from whooping-cough, 1 from simple continued fever, and 19 from diarrhœa. Among the 35 deaths registered in Cork are 2 from typhus and 1 from whooping-cough. The 7 deaths in Limerick comprise 2 from diarrhœa.

In the Dublin Registration District the registered births amounted to 179—88 boys and 91 girls; and the registered deaths to 161—80 males and 81 females.

The deaths, which are 5 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 24·0 in every 1,000 of the population. Omitting the deaths (numbering 4) of persons admitted to public institutions from localities outside the district, the rate was 23·4 per 1,000. During the first thirty-four weeks of the current year the death-rate averaged 32·0, and was 4·1 over the mean rate in the corresponding period of the ten years 1882–1891.

Twenty-three deaths from zymotic diseases were registered, being 1 over the number for the week ended August 20, but 3 below the average for the 34th week of the last ten years. They comprise 2 from measles, 1 from typhus, 1 from enteric fever, and 9 (including 7 deaths of children under 5 years old) from diarrhœa.

The number of cases of measles admitted to hospital was 9, being 5 under the admissions for the preceding week: 10 measles patients were discharged, 2 died, and 55 remained under treatment on Saturday, being 3 under the number in hospital at the close of the preceding week.

Twenty cases of enteric fever were admitted to hospital against 10 admissions for the preceding week. Eight patients were discharged and 53 remained under treatment on Saturday, being 12 over the number in hospital at the close of the preceding week.

The hospital admissions for the week include, also, 2 cases of scarlatina, but no cases of typhus were received: 16 cases of the former and 1 case of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system was 19, being equal to the average for the corresponding week of the last ten years, and 11 over the low number for the week ended August 20. They comprise 9 from bronchitis, 5 from pneumonia or inflammation of the lungs, and 1 from croup.

In the week ending Saturday, September 3, the mortality in thirty-three large English towns, including London (in which the rate was 16·6), was equal to an average annual death-rate of 19·8 per 1,000 persons living. The average rate for eight principal towns of Scotland was 15·7 per 1,000. In Glasgow the rate was 17·0, and in Edinburgh it was 14·3.

The average annual death-rate represented by the deaths registered in the sixteen principal town districts of Ireland was 22·7 per 1,000 of the population based on the Census of 1891.

The deaths from the principal zymotic diseases in the sixteen districts were equal to an annual rate of 4·3 per 1,000, the rates varying from 0·0 in nine of the districts to 12·5 in Waterford—the 9 deaths from all causes registered in that district comprising 5 from diarrhœa. Among the 122 deaths from all causes registered in Belfast are 1 from measles, 2 from whooping-cough, 2 from diphtheria, 5 from enteric fever, and 27 from diarrhœa. The 26 deaths in Cork comprise 1 from enteric fever and 2 from diarrhœa.

In the Dublin Registration District the registered births amounted to 184—91 boys and 93 girls; and the registered deaths to 176—95 males and 81 females.

The deaths, which are 3 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 26·3 in every 1,000 of the population. Omitting the deaths (numbering 5) of persons admitted to public institutions from localities outside the district, the rate was 25·5 per 1,000. During the first thirty-five weeks of the current year the death-rate averaged 31·8, and was 4·0 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 36, being equal to the average for the corresponding week of the last ten years, and 13 over the number for the week ended August 27. The 36 deaths comprise 1 from measles, 2 from scarlatina, 2 from diphtheria, 2 from enteric fever, 19 (including 17 deaths of children under 5 years of age) from diarrhœa, and 1 from erysipelas.

Only 2 cases of measles were admitted to hospital, being 7 under the admissions for the preceding week: 23 measles patients were discharged, 1 died, and 33 remained under treatment on Saturday, being 22 under the number in hospital at the close of the preceding week.

The number of cases of enteric fever admitted to hospital was 19, being 1 under the admissions for the preceding week: 7 patients were discharged, and 65 remained under treatment on Saturday, being 12 over the number in hospital on Saturday, August 27.

The hospital admissions for the week include, also, 4 cases of scarlatina, but no cases of typhus were received: 16 cases of the former and 1 case of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system was 19,

being equal to the number for the week ended August 27, but 2 below the average for the 35th week of the last ten years. The 19 deaths comprise 13 from bronchitis and 5 from pneumonia or inflammation of the lungs.

In the week ending Saturday, September 10, the mortality in thirty-three large English towns, including London (in which the rate was 16·6), was equal to an average annual death-rate of 18·9 per 1,000 persons living. The average rate for eight principal towns of Scotland was 16·6 per 1,000. In Glasgow the rate was 17·3, and in Edinburgh it was 16·1.

The average annual death-rate in the sixteen principal town districts of Ireland was 22·7 per 1,000 of the population according to the Census of 1891.

The deaths from the principal zymotic diseases registered in the sixteen districts were equal to an annual rate of 4·7 per 1,000, the rates varying from 0·0 in eight of the districts to 7·3 in Belfast—the 124 deaths from all causes registered in that district comprising 1 from measles, 2 from whooping-cough, 2 from diphtheria, 4 from enteric fever, and 27 from diarrhœa. Among the 13 deaths from all causes registered in Londonderry are 1 from measles and 2 from whooping-cough. The 8 deaths in Waterford comprise 1 from enteric fever and 1 from diarrhœa.

In the Dublin Registration District the registered births amounted to 163—93 boys and 70 girls; and the registered deaths to 190—104 males and 86 females.

The deaths, which are 26 over the average number for the corresponding week of the last ten years, represent an annual rate of mortality of 28·3 in every 1,000 of the population. Omitting the deaths (numbering 6) of persons admitted to public institutions from localities outside the district, the rate was 27·4 per 1,000. During the first thirty-six weeks of the current year the death-rate averaged 31·7, and was 4·0 over the mean rate in the corresponding period of the ten years 1882–1891.

The number of deaths from zymotic diseases registered is 47, being 14 above the average for the corresponding week of the last ten years, and 11 over the number for the week ended September 3. The 47 deaths comprise 3 from measles, 1 from influenza, 1 from whooping-cough, 4 from enteric fever, and 28 (including 26 deaths of children under 5 years of age) from diarrhœa.

Two cases of measles had been admitted to hospital during the preceding week, but no cases were received this week: 10 measles patients were discharged, 2 died, and 21 remained under treatment on Saturday, being 12 under the number in hospital at the close of the preceding week.

The number of cases of enteric fever admitted to hospital is 17, being 2 below the admissions for the preceding week. Five patients were dis-

charged, 2 died, and 75 remained under treatment on Saturday, being 10 over the number in hospital on Saturday, September 3.

The hospital admissions for the week include, also, 2 cases of scarlatina, but no cases of typhus were received: 13 cases of the former and 1 case of the latter disease remained under treatment in hospital on Saturday.

The number of deaths from diseases of the respiratory system is 17, being 2 under the number for the previous week, and 1 under the average for the 36th week of the last ten years. The 17 deaths consist of 8 from bronchitis, 8 from pneumonia or inflammation of the lungs, and 1 from croup.

Meteorology.

Abstract of Observations made in the City of Dublin, Lat. 53° 20′ N., Long. 6° 15′ W., for the Month of August, 1892.

Mean Height of Barometer,	29·852 inches.
Maximal Height of Barometer (on 10th, at 9 a.m.),	30·230 „
Minimal Height of Barometer (on 30th, at noon)	29·140 „
Mean Dry-bulb Temperature,	59·0°.
Mean Wet-bulb Temperature,	56·2°.
Mean Dew-point Temperature,	53·6°.
Mean Elastic Force (Tension) of Aqueous Vapour,	·412 inch.
Mean Humidity,	82·8 per cent.
Highest Temperature in Shade (on 11th and 13th)	70·0°.
Lowest Temperature in Shade (on 10th),	43·0°.
Lowest Temperature on Grass (Radiation) (on 10th),	40·9°.
Mean Amount of Cloud,	64·9 per cent.
Rainfall (on 22 days),	3·557 inches.
Greatest Daily Rainfall (on 16th),	1·310 inches.
General Directions of Wind,	W., S.W., N.W.

Remarks.

Although changeable and forming no exception to the rule that August is characterised by heavy rains, this month was much less unfavourable than it had proved in each of the three preceding years. While no excessively high thermometer readings were noted in Ireland, the mean temperature was fully up to the average—in Dublin it was slightly in excess. The rains also, if heavy, were never continuous, and fine, bright intervals were often enjoyed. From a medical point of view it was a healthy month, diarrhœal diseases being held in check by the fresh high winds and abundant rainfall.

In Dublin the arithmetical mean temperature (60·0°) was slightly above the average (59·7°); the mean dry bulb readings at 9 a.m. and 9 p.m. were 59·0°. In the twenty-seven years ending with 1891, August

was coldest in 1881 (M.T. = 57·0°), and warmest in 1871 (M. T. = 62·0°). In 1885, the M. T. was only 57·1°; in 1879 (the "cold year"), it was 57·7°; in 1887 it was 60·3°; in 1888 it was 58·2°; in 1889, 58·6°; in 1890, only 57·2°, and in 1891, 58·1°.

The mean height of the barometer was 29·852 inches, or 0·045 inch below the corrected average value for August—namely, 29·897 inches. The mercury marked 30·230 inches at 9 a.m. of the 10th, and fell to 29·140 inches at noon of the 30th. The observed range of atmospherical pressure was, therefore, 1·090 inches—that is, a little less than an inch and one-tenth.

The mean temperature deduced from daily readings of the dry bulb thermometer at 9 a.m. and 9 p.m. was 59·0°, or 1·4° above the value in August, 1888 and 1889, 2·7° above the value in August, 1890, and 1·8° above it in 1891. It was also 1·8° above the value for July, 1892. Using the formula, *Mean Temp.* = *Min.* + (*max.*—*min.* × ·47), the value was 59·6°, or 0·3° above the average mean temperature for August, calculated in the same way, in the twenty-five years, 1865–89, inclusive (59·3°). The arithmetical mean of the maximal and minimal readings was 60·0°, compared with a twenty-five years' average of 59·7°. On the 11th and 13th, the thermometer in the screen rose to 70·0°—wind, W.S.W. on both occasions; on the 10th the temperature fell to 43·0°—wind, calm. The minimum on the grass was 40·9° on the same date.

The rainfall was 3·557 inches, distributed over as many as 22 days. The average rainfall for August in the twenty-five years, 1865–89, inclusive, was 2·825 inches, and the average number of rainy days was 15·5. The rainfall, therefore, and the rainy days were considerably in excess of the average. In 1874 the rainfall in August was very large—4·946 inches on 18 days; and in 1868 also 4·745 inches fell on, however, only 13 days; but the heaviest downpour in August occurred in 1889, when 5·747 inches were registered on 22 days. On the other hand, in 1884, only ·777 inch was measured on 8 days. In 1887, 1·520 inches of rain fell on 16 days, in 1888, 1·270 inches on 12 days, in 1890, 2·799 inches on 19 days, and in 1891, 4·953 inches on 25 days.

High winds were noted on as many as 12 days, and attained the force of a gale on two occasions—namely, the 1st and 14th. A thunderstorm occurred on the 18th. Thunder was heard on the 13th. Lightning was seen on the 22nd and 23rd. Temperature reached 70° in the screen on two days. Solar halos were seen on the 10th, 17th, and 19th. It was foggy on the 22nd. A shock of earthquake was felt in the Counties of Dublin, Kildare, Wicklow, and Wexford, in the early morning of the 18th.

The record of the weather of the period ended Saturday, the 6th, is distinctly favourable. There was an advance in temperature, and the amount of bright sunshine was again considerable. Until Friday, the

5th, an anticyclone extended over Ireland from the Atlantic, while depressions of no great depth passed in succession southeastwards across Scandinavia and the North Sea. Hence northwesterly winds prevailed, sometimes blowing very freshly, and clouds and showers were reported from exposed stations from time to time. On Friday a broad band of high pressure stretched eastward across France and the South of England, while a depression of some intensity crossed the North of Scotland in an easterly direction. Under the influence of this system, the wind backed temporarily to S.W. in Ireland, and heavy showers fell in places. On Saturday, the weather was again fine and dry, with fresh W. and W.N.W. winds. In Dublin the barometer ranged between 30·227 inches at 9 p.m. of Monday (wind N.N.W.) and 29·894 inches at 9 p.m. of Friday (wind W.S.W.). The screened thermometers rose to 67·9° on Wednesday and fell to 53·0 on Thursday, and to 53·1° on Saturday. Rainfall amounted to ·151 inch on four days, ·061 inch being measured on Saturday. The prevailing winds were N.W. and W.

During the week ended Saturday, the 13th, the weather was changeable, with some heavy falls of rain at the beginning and close, and a considerable range of temperature. As regards distribution of atmospherical pressure, it may be described as being of a mixed type—at first it was cyclonic, then it became anticyclonic, and finally it reverted to the cyclonic form. During Sunday and Monday a shallow depression was passing in an easterly direction across the British Islands. This system showed no steep baric gradients, and was remarkable rather for the heavy rains which attended its passage than for any high winds. In two days, 1·63 inches of rain fell at Valentia in Kerry; 2·00 inches at Holyhead; 1·38 inches at Parsonstown; and 1·34 inches at Donaghadee. When this system moved away eastwards, northerly winds set in, the sky cleared, and radiation became so great that night minima between 36° and 43° were reported from most parts of the British Islands. On Thursday an anticyclone, which had come in from the Atlantic on Tuesday, moved southeastwards to the Continent, and a new series of depressions appeared in the extreme North-West. These brought fresh S.W. winds and rain or showers on Friday and Saturday, but the broken weather was compensated for by pleasantly high temperatures. In Dublin the mean height of the barometer was 29·926 inches, pressure ranging between 30·230 inches at 9 a.m. of Wednesday (wind calm), and 29·509 inches at 5 p.m. of Saturday (wind S.W.). The corrected mean temperature was 58·8°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 58·9°. The screened thermometers rose to 70·0° on Thursday and Saturday, having fallen to 43·0° on Wednesday. The rainfall was ·859 inch on five days, ·680 inch being measured on Sunday. The most prevalent wind was S.W. Thunder was heard on Saturday afternoon, when thunderstorms with heavy rain prevailed in the County Wicklow. Bril-

liant aurora was seen in many parts of North-Western Europe on Friday night.

The week ended Saturday, the 20th, is remarkable for the prevalence of torrid heat on the Continent, the occurrence of an earthquake in the S.W. of England, the S. of Wales, and the S.E. of Ireland early on Thursday morning, and the prevalence of very heavy thunder-rains—at first in Ireland, afterwards in England and over France. On Sunday more than an inch of rain fell at Parsonstown and Donaghadee, and three-quarters of an inch at Roche's Point. A second rainstorm occurred on Tuesday, when 0·95 inch was measured at Roche's Point and 1·31 inches in Dublin. Wednesday was a fine day, but a solar halo appeared in theafternoon. At 12 3 a.m. of Thursday (by Irish time) an earthquake was felt in the Counties of Dublin, Kildare, Wicklow, and Wexford, as well as in South Wales, Devonshire, and Cornwall. Later in the day there was a heavy rainfall in Dublin, accompanied by thunder and lightning. Friday proved beautifully fine in Ireland, but severe thunderstorms were felt over the greater part of Southern England, the attendant rainfall exceeding an inch in many places—1·3 inches at Cambridge, 1·36 inches in Jersey. But the most remarkable feature of the period was the excessive heat on the Continent. On Tuesday, the thermometer rose to 108° at Biarritz. Next day the maximum at that station was 104°, while it was 98° at Lyons, 97° at Wiesbaden, 95° at Berlin, and 93° in Paris. On Thursday the thermometer touched 95° in Paris, 96° at Brussels, and 97° at Lyons. The highest reading in the British Islands during this heated period was 83° at Cambridge on Wednesday. In Dublin the mean height of the barometer was 29·813 inches, and pressure varied from 29·271 inches at 9 p.m. of Sunday (wind S.W.) to 29·987 inches at 9 a.m. of Tuesday (wind S.) The corrected mean temperature was 59·3°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 58·6°. The screened thermometers rose to 68·8° and also fell to 50·1° on Saturday. The rainfall measured 1·828 inches, of which 1·310 inches fell on Tuesday. The rainy days were five. The prevailing wind was S.W.

Although changeable, the weather of the week ended Saturday, the 27th, was by no means unfavourable in Dublin. Over the south and west of Ireland, however, extremely heavy rains fell between Sunday evening and Wednesday morning—at Roche's Point, Co. Cork, the measurement was no less than 4·35 inches, 2·75 inches falling in the 24 hours ending 8 a.m. of Wednesday. This downpour was, as usual, connected with the formation of shallow atmospherical depressions moving but slowly, with hot southerly winds to the eastward and cool northerly winds on their western side. One of these depressions formed over the South of England on Tuesday, causing severe thunderstorms but no excessive rains in that district. These disturbances followed upon a

day of great heat, the shade thermometer having risen on Tuesday to 77° at Oxford, 78° at York, 80° in London, and 82° at Loughborough and Cambridge. On Friday and Saturday a general and very decided reduction of pressure took place in the North, so that fresh westerly winds were felt and heavy showers fell in places, Dublin again almost entirely escaping the bad weather. In Dublin the mean height of the barometer was 29·829 inches, pressure ranging from 30·036 inches at 9 p.m. of Sunday (wind, S.S.W.) to 29·568 inches at 5·45 p.m. of Saturday (wind, W.). The corrected mean temperature was 60·9°. The mean dry bulb temperature at 9 a.m. and 9 p.m. was 60·3°. The shade thermometers rose to 69·9° on Sunday and fell to 49·8° on Thursday. The rainfall was ·137 inch, on four days, ·061 inch being measured on Tuesday. The prevailing winds were at first S., afterwards W. Lightning was seen on the nights of Monday and Tuesday.

During the last four days of the month the weather remained in an unsettled, rainy condition, owing to the passage in a north-easterly direction of a deep depression across the British Islands. Large quantities of rain fell, and the winds were at times very high. In Dublin the barometer sank to 29·140 inches at noon of the 30th. This illustrates the statement made last year that deep cyclonic systems sweep almost periodically across North-Western Europe during the last week of August.

The rainfall in Dublin during the eight months ending August 31st has amounted to 17·279 inches on 131 days compared with 9·455 inches on 96 days during the same period in 1887, 17·264 inches on 121 days in 1888, 18·893 inches on 134 days in 1889, 18·386 inches on 137 days in 1890, 15·888 inches on 117 days in 1891, and a 25 years' average of 17·558 inches on 128·1 days.

At Knockdolian, Greystones, Co. Wicklow, the rainfall in August, 1892, was 4·588 inches, distributed over 18 days. Of this quantity ·710 inch fell on the 16th. The total fall since January 1 has been 21·296 inches on 108 days.

POPULATION OF NEW YORK.

According to the *N. Y. Medical Record*, experts differ considerably as to the population of the city of New York. The U. S. Census of 1890 puts it at 1,515,501. The City Board of Health estimated it at 1,631,232 on the 1st of July, 1890. The recent State Census says 1,800,891. Taking the Board of Health figures as a basis, the estimated population in April, 1892, would be about 1,700,000; but an estimate founded on the U.S. Census would give 1,400,000. The death-rate varies from 22 to 27 per 1,000 according to the population-basis selected. The *Record* considers that the Board of Health's estimate, making the population about 1,700,000, is the most trustworthy.

PERISCOPE.

THYROID EXTRACT AFTER THYROIDECTOMY.

In the first fasciculus of this year of the Original Memoirs of *Lo Sperimentale* will be found a paper by Dr. Schwarz, Assistant in the pathological laboratory of Bologna, giving results of his examination into Vassale's conclusions. This physiologist published in 1890 a series of experiments, from which he inferred that an extract of the thyroid gland of the dog or the calf, injected into the veins of dogs from which the thyroid had been removed, not only confered immunity from the ordinary effects of extirpation, but also counteracted these effects after they had been developed. If this were so we should have a therapeutical remedy for cachexia strumipriva and other consequences of loss of the thyroid gland. Dr. Schwarz undertook two series of experiments, injecting thyroid extract before and after the development of the results of thyroidectomy. His conclusion is that the intravenous injection of thyroid extract has no power to arrest or prevent the consequences of extirpation of the gland.

TYPHUS IN NEW YORK.

On the night of the 11th February last the sanitary authorities of New York were made aware of an outbreak of typhus fever in the city—the most serious that has occurred for many years. The history is thus summarised by the *Boston Medical and Surgical Journal*:—On January 30th the French steamer Massilia, of the Fabre line, arrived with 717 steerage passengers. Two hundred and fifty of these were Russian Hebrew immigrants who were aided by funds provided by Baron Hirsch, and they were first transported from Odessa to Constantinople, whence they hoped to be able to go to Palestine and settle. Being disappointed in this, through the action of the Turkish authorities, they came to Marseilles, where they embarked on the Massilia, together with a considerable number of other immigrants of various nationalities. The steamer on January 1st took on board more than two hundred Italians, and on January 12th she sailed from Gibraltar. During the voyage to New York, according to the passengers' account when they landed, they were insufficiently fed, and four died in mid-ocean. On the ship's arrival eleven passengers were still ill, three of them with what was believed to be typhoid fever, but which, as the sequel shows, was undoubtedly typhus. They were all sent to the immigrant station on Ellis Island, the Russian refugees unfortunately being permitted to land on the understanding that the United Hebrew Charities, which have charge of the disposition of the Baron Hirsch fund in New York, should

not permit them to become a burden in this country! They were for the most part in a pitiable state of destitution, and some 400 dols. was expended in providing clothing for them. One of the houses to which they were sent was on Twelfth-street, near Third Avenue, and a number of its inmates were soon reported ill. A physician in the service of the United Hebrew Charities was called to attend them on the 8th, and on the 11th he reported to the Bureau of Contagious Diseases with a view to have some of the sick removed to hospital. The official inspector visited the infected premises, found 15 cases of typhus, and ascertained that the first case had occurred on the 2nd. Other tenements where Russian immigrants had been lodged supplied 43 cases, and about 60 Russian passengers by the Massilia had been sent up country, probably carrying typhus with them to disperse. When the paper was written 89 cases were under treatment in hospital. The Russian immigration into the United States under the impulse of Jew-baiting and political discontent is enormous and alarming. In the last six months of 1891 "the number of immigrants coming from Russia (Poland excepted) in those months was 46,710 as against 20,934 in the corresponding months of 1890. The whole number of immigrants was greater in 1891 than in 1890 by about 100,000, and nearly half of this increase is ascribed in the reports to Russia and Poland."

THE MEETING OF THE BRITISH MEDICAL ASSOCIATION AT NOTTINGHAM.

Messrs. Burroughs, Wellcome, & Co., of Snow Hill Buildings, London, have asked us to mention that they have made arrangements to send to any member of the medical profession upon request a photographic souvenir of the recent annual meeting of the British Medical Association, which, as our readers will remember, took place at Nottingham during the last week of July. We have received two of these souvenirs, and have no hesitation in pronouncing them to be excellent specimens of the photographic art.

NEW PREPARATIONS AND SCIENTIFIC INVENTIONS.

Tabloids of "Blaud's Pills," of Ergotin, of Resorcin, and of Ichthyol.

These are the most recent additions to Messrs. Burroughs & Wellcome's long list of compressed tabloids.

Each tabloid of "Blaud's Pills" is equivalent to four grains of Blaud's formula. Its ingredients are kept in perfect condition until the tabloid reaches the stomach, where it quickly decomposes and ferrous carbonate passes off the surface as formed. Upon wetting the surface of the tabloid the green ferrous carbonate at once becomes visible. Owing to their size and shape, these tabloids can be taken

without difficulty even by fastidious patients who can make no attempt to swallow an ordinary pill. They are elegantly dispensed in an oval, well-stoppered bottle of dark-coloured glass.

The tabloids of compressed ergotin contain three grains of Bonjean's ergotin in each.

The compressed tabloids of resorcin are of the strength of 3 grains. They are readily soluble in water, and the solution may be used for topical application, subcutaneous injection, or internally in the form of a draught. The resorcin is guaranteed free from creasotic impurities. The drug is employed with advantage in lupus, epithelioma, and other forms of cancer; in chronic and impetiginous eczema, as well as in fermentative dyspepsia and consequent diarrhœa.

Each of the tabloids of compressed ichthyol contains $2\frac{1}{2}$ grains. The disagreeable flavour of the drug is completely hidden by a sugar coating, which is, however, entirely soluble. The flattened ovoid shape of these tabloids enables the patient to swallow them with far less trouble than ordinary pills which are apt to roll about in the mouth. One or more tabloids should be swallowed whole with a draught of water or other fluid. Ichthyol contains about 15 per cent. of sulphur. By extracting oxygen from the tissues it becomes a reducing agent, producing an invigorating and antiseptic influence throughout the body, and an astringent effect on the blood-vessels.

Valdepeñas.

Under this name Messrs. A. Sordo Lopez and Son, importers of Spanish wines and produce, of George-street, Manchester-square, London, have introduced to the notice of the medical profession two novel wines, of their own shipment. These wines are prepared from grapes grown in an iron soil, and are stated to be absolutely pure. One of the wines is red, the other is white.

In the *Lancet* of May 14th, 1892, will be found the following analysis: "Red Valdepeñas" contains—alcohol 12·30 per cent. by weight (equal to 15·20 per cent. by volume); extract 2·6 per cent.; mineral matter 0·24 per cent. The white wine gave the following results:—Alcohol 10·95 per cent. (equal to 13·55 per cent. by volume); extract 1·43 per cent.; mineral matter 0·32 per cent.

We have tried both wines, and are free to confess that we prefer the "White Valdepeñas." It is very light, has a delicate bouquet and a remarkable flavour—at first it resembles hock, but the after-taste is that of a very dry sherry. It is a refreshing luncheon or dinner wine.

The "Red Valdepeñas" is of the Burgundy or Carlowitz type. Its taste is somewhat rough, but diluted with Seltzer water, it makes an excellent beverage.

Both these novel wines are very inexpensive.

Is Malto-Carnis (Caffyn) a Complete Food?

It may be, perhaps, advisable to consider in detail a few of the considerations which have guided us in the production of Malto-Carnis (Caffyn).

1st.—There must be readily diffusible proteid to cover the tissue-waste or wear and tear of the machine, to maintain as near as possible a "nitrogenous equilibrium," the pivot of Metabolism (M. Foster). This is supplied by the Liquor Carnis (Caffyn).

2nd.—Likewise the necessary carbon and hydrogen for oxidation or combustion purposes, the fuel from which the machine derives its motive power—the "reserve of potential energy." This is supplied by extract of malt and a small quantity of natural fat.

3rd.—The stimulant which a weakened organism requires to facilitate metabolism, both constructive and excretory, so that waste matter may the more readily be thrown off and tissue activity increased. This is met by the pure Cocoa Extract with its alkaloid.

Next to cod liver oil, amongst invalid nutrients, comes Extract of Malt, which has, in addition to its other properties, that of a diastatic influence upon starch, and a not unpleasant flavour which is often utilised (more or less unsuccessfully) to disguise the nauseousness of its congener.

Caffyn's Malto-Carnis combines all these properties; it is, therefore, not only a novelty, but a triumph of the laboratory and the scientific cuisinier.

Medical Gentlemen who desire to test Caffyn's Liquor Carnis, Malto-Carnis, Jelly Carnis, or Suppositories of unchanged Meat Juice, will be supplied with original packages by communicating their desires to The Liquor Carnis Company, Ltd., London, E.C., who are the Sole Manufacturers and Patentees.

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LACTOPEPTINE contains the five active agents of digestion, combined in the same proportion as they exist in the human stomach, and will digest food in a manner identical to that obtained under the influence of the natural gastric juice.
LACTOPEPTINE will be found far superior to all other remedies in Indigestion, Dyspepsia, and kindred diseases.
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From "RETROSPECT OF PRACTICAL MEDICINE AND SURGERY," *July*, 1877.

"A glance at the formula of **LACTOPEPTINE** would convince even the most sceptical of the valuable results that must ensue through its administration. It is a combination of all the digestive agents, consequently can never be administered without giving the utmost satisfaction.

Extract from Certificate of Composition and Properties, by

Professor ATTFIELD, Ph.D.,

Professor of Practical Chemistry to the Pharmaceutical Society of Great Britain.

LONDON, *May 3rd*, 1882.

I now report that the almost inodorous and tasteless pulverulent substance termed Lactopeptine is a mixture of the three chief agents which enable ourselves and all animals to digest food. That is to say, Lactopeptine is a skilfully-prepared combination of meat-converting, fat-converting, and starch-converting materials, acidified with those small proportions of the acids that are always present in the healthy stomach; all being disseminated in an appropriate vehicle, namely, powdered sugar of milk. The acids used at the factory—lactic and hydrochloric—are the best to be met with, and are perfectly combined to form a permanent preparation; the milk sugar is absolutely pure; the powder known as "diastase," or starch-digesting (bread, potato, and pastry-digesting) material, as well as the "pancreatin," or fat-digesting ingredient, are as good as any I can prepare, while the pepsin is much superior to that ordinarily used in medicine. Indeed, as regards this chief ingredient, pepsin—I have only met with one European or American specimen equal to that made and used by the Manufacturer of Lactopeptine. A perfectly parallel series of experiments showed that any given weight of acidified pepsin alone at first acts somewhat more rapidly than Lactopeptine containing the same weight of the same pepsin. Sooner or later, however, the action of the Lactopeptine overtakes and outstrips that of pepsin alone—due, no doubt, to the meat-digesting, as well as fat-digesting, power of the pancreatin contained in the Lactopeptine. My conclusion is that Lactopeptine is a most valuable digesting agent, and superior to pepsin alone. JOHN ATTFIELD.

One of the chief features of **LACTOPEPTINE** (and the one which must gain it a preference over all digestive preparations) is, that it *precisely represents in composition* the *natural digestive juices* of the *stomach, pancreas*, and *salivary glands*, and will therefore readily dissolve all foods necessary to the recuperation of the human organism.

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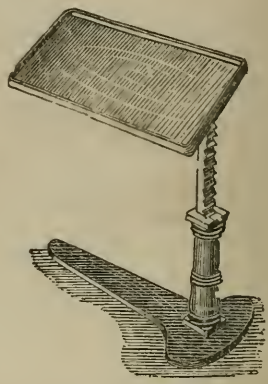

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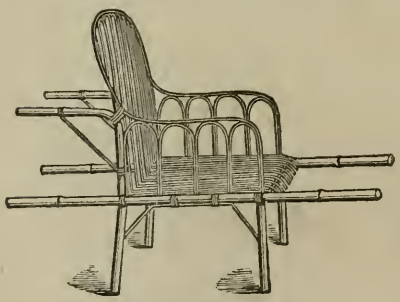

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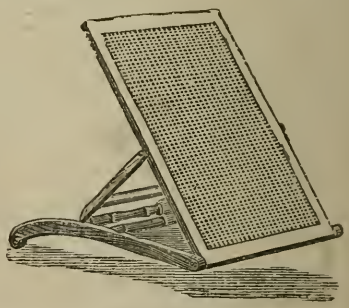

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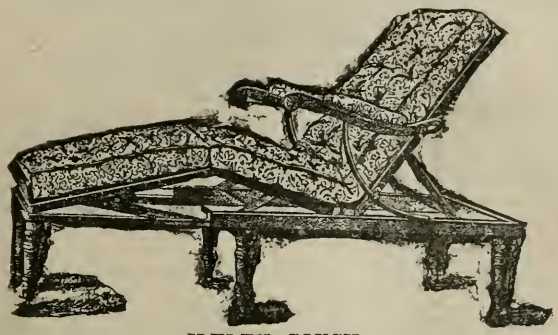

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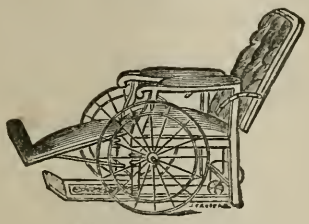

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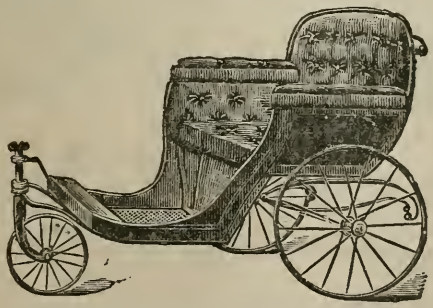

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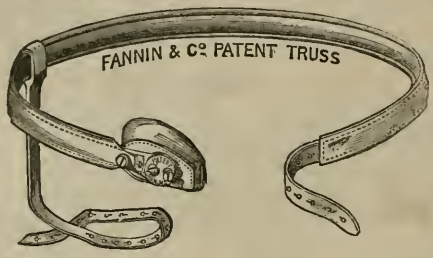

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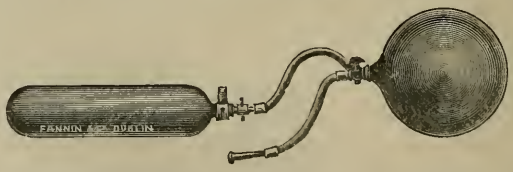

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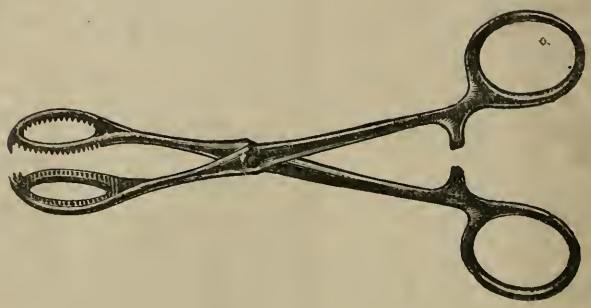

"HAVING experienced considerable difficulty in the removal of strumous glands, owing to their friable character, when caught with the ordinary clip forceps, I had this instrument (as shown) made by Messrs. FANNIN & CO., and find it most useful for the purpose. The blades coming in contact only at the apex, the gland is received within the fenestrated portion, and thus is not broken. The instrument will also be found useful in the removal of any morbid growth.

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DECEMBER, 1891.

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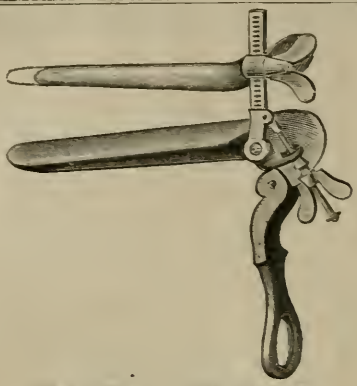

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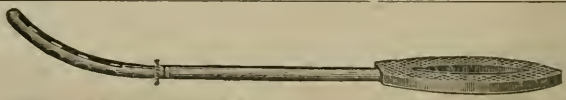

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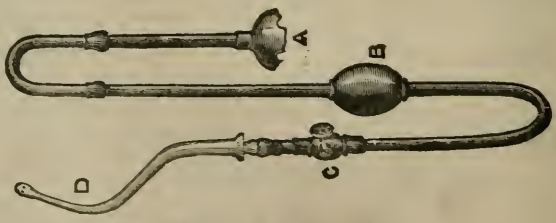

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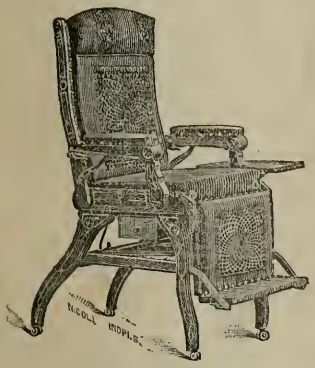
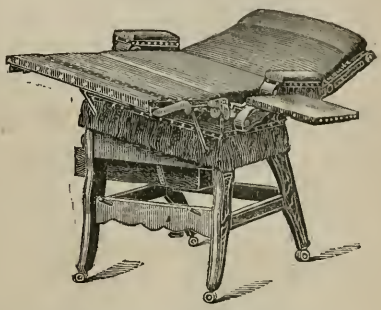
Physicians' and Surgeons' Operating Chair.

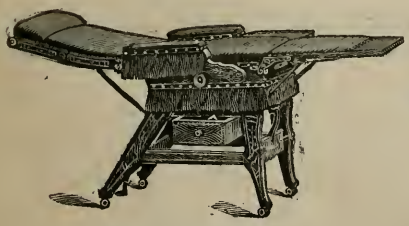
This Chair has been specially constructed to meet the wants and requirements of the Profession. It is simply constructed, with perfect adjustment, strength, and convenience, without those complications noticeable in other chairs. It can be easily moved to its different positions by the operator without changing his position.



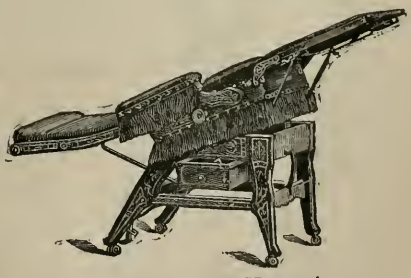
Normal Position.
Can be also used as an Ordinary Office Chair.



Lateral or Sinus Position.
This position is important to gynæcologists, and in treatment of rectal diseases, with side table for instruments.



Horizontal Position



For Anæsthesia Narcosis.
This position is very important in cases of hæmorrhage or suspended animation, and can be obtained instantly. The patient can be rocked up and down by pressing the lever.

It can also be placed in the dorsal and genito-urinary positions. This Chair has given the greatest satisfaction wherever used, and is suitable for private and hospital practice.

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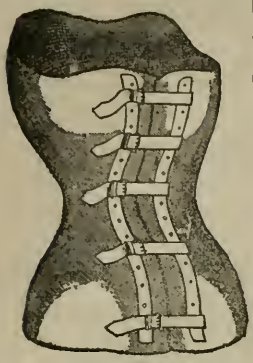


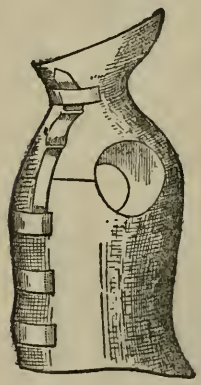
Instructions for Measurement, &c.

JACKET (*in cases of slight deformity*).

Circumference at axilla.
„ waist.
„ hips.
Length from axilla to great trochanter.

In severe angular cases circumference over apex of curve, position of same, and contour should be given; in lateral cases a description of the case.

In all cases it should be stated if for male or female.



CERVICAL JACKET.

Same measurements required, and circumference at neck, and length from neck to axilla.

Any part of the Jacket can in the process of Manufacture be left Soft.

CLUB FOOT.

Circumference below knee.
„ ankle.
„ heel and instep.
Length from below knee to ground.
„ of foot.

ERI
at the R[illegible]
Circular.
Pric[illegible]

SOLE AGENTS FOR DUBLIN—**FANNIN & CO.,**

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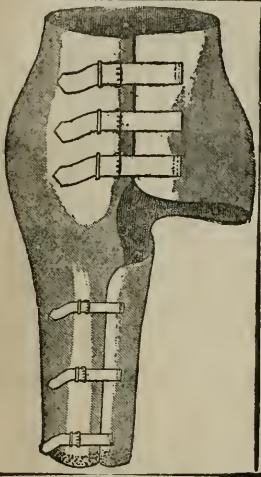
Cocking's Adaptable Poroplastic Jackets and Splints.



Instructions for Measurement, &c.

HIP SPLINT.

Circumference at waist.
„ hips.
„ thigh, top of
„ above knee.
Length from waist to groin.

State if for right or left side.

LEG SPLINT.

Circumference at top of thigh.
„ above knee.
„ at knee.
„ below knee.
„ calf.
„ ankle.
Length from groin to centre of knee.
„ centre of knee to ankle.

State if for right or left leg.

When the foot-part is required, also circumference of heel and instep, and length from centre of knee to ground.

If the limb is contracted the contour should be given.

Splints are also made in Poroplastic for fracture of Inferior Maxilla, Humerus Elbow-Joint, Forearm, Thigh, Knee-Joint, Leg, Shoulder-Joint, Hand, &c.

These Splints can be fitted perfectly to the Patient if softened either by hot water or in a Heater made for the purpose. When mounted with webbing, hot water will do; if with leather, a Heater should be used. The material becomes quite hard again in two or three minutes.

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First Order of Merit and Medal, Melbourne, 1888.

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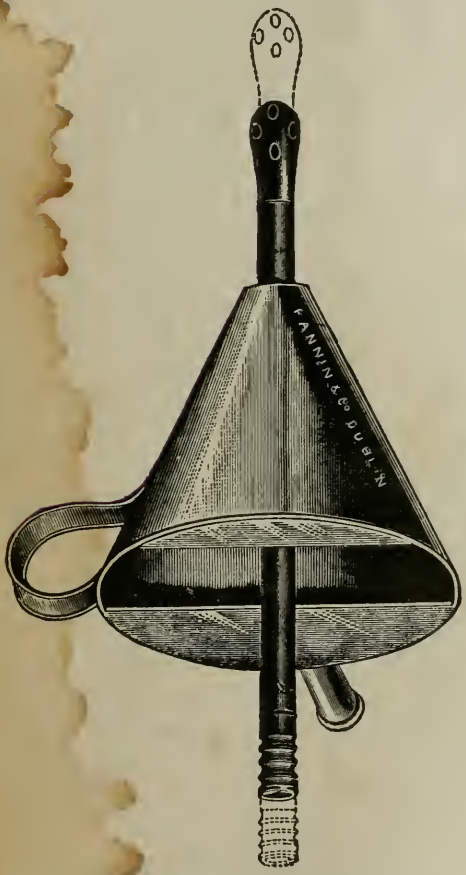

Extract from "Medical Press,"
April 20, 1892.

It is almost an impossibility with the ordinary means at our disposal to wash out the vagina while the patient is in the recumbent position without wetting either the bed or couch on which she lies.

It will be generally admitted that the principal value of a vaginal lavement will be lost if not administered while in the recumbent position, so that I venture to hope that the appliance illustrated will be found in every-day practice to supply a want both to obstetrician, gynæcologist, and monthly nurse. By the use of this simple form of irrigator tube all wetting of the bed and patient will be avoided, whether used by the patient herself or employed by her attendant. The usual preliminary alteration of the patient's position, bringing hips to edge of bed, waterproof sheet, &c., can all be dispensed with.

The appliance consists of an ordinary funnel through which a vulcanite or glass tube passes, and which can be shortened or lengthened at will. This tube with apex of funnel is to be introduced into vagina (the former having been previously filled with water), both are now pressed firmly into the passage and held in close contact with the vulva. The lavement is then to be administered in the usual way, either by syringe or douche, and if the funnel be properly held, *the return current cannot possibly escape except round the tube into the apex of the funnel in vagina;* and so finds its way out of exit pipe on side of same, to which tubing may be attached leading to vessel underneath the bed if desired.

Having experienced the comfort and saving of both time and temper by the use of the appliance described, I have no hesitation in recommending its adoption as a vast improvement on any form of vaginal tube I have ever heard of, or seen pictured in any of the various surgical instrument catalogues extant.

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OF THE

LOCAL GOVERNMENT BOARD

RESPECTING

CHOLERA,

26th August, 1892:

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IF ANY TAINT (*however small*) of the infective material gets access to wells or other sources of drinking water, it can impart to enormous volumes of water the power of propagating the disease.

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